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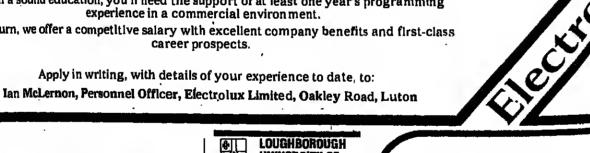
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# COMPUTER WEEKLY Micernalinoma

US databases offer to Third World countries

government minister reaponable for com-

There are three Western Europaan

THE US government is expected to offer developing countries terminal access to all informatics, headquartered in Rome. IBI

the major databases publicly available in the currently has 25 members, but nearly 100

US as its principal contribution to a big countries are expected to be represented at

Informatics, conference, tha meeting takes place in Torremolinos, Spain, from August 28 to September 6.

The SPIN conference is being organised The other members are all non-ailgned Third

maintenance up to 1990.

Until the last minute, the two

leading contenders for the con-

troct were Saab-Univac, bidding

90/30s, and Siemens, with 7.738s

and 7.730s. The systems ore to

link to a large-scale Univac 1100

mainframe in Stockholm, which

hns already been installed; at

present, 14 of the regional tax

offices have old Datasaab D21.

D22 and D220 small mainframes,

and Saab-Univac offered to hav

these back in furtherance of its

Univac's bid was ruled out on

the grounds that regional plan-

ning opplications may be added to the systems later, and the

Human rights concern as US ships

three fingerprint systems to Brazil

The Brazillan police dossler

systems, which automotically

inter-governmentsi congress on computer

development which takes place in Spain

A LAST-MINUTE price cut,

made "in anticipation of falling

hardware costs", has helped

CII-Honeywell Bull to become

the surprise winner of a mojor

government contract in Sweden

over the majority Swedish-

owned Saab-Univac. The con-

tract, for 22 medium-scale Level

period in which every major

State contract has gone to Uni-

Worth 59.9million Swedish

Krone, about £7.1 million, the

order is for French-built Level

64/40, 64/30 and 64/20 mnchines

for regional tax authorities, and

covers enhancements and

64 systems, ends a slx-year

Called SPIN, Strategies and Policias for

Middle East and Africa.

the conference, most of them by the establishment of national computer policies,

90/30s had insufficient capacity

systems had the edge in both

price and performance; but the company has a limited service

Siemens' orlginal bid in March

wos SKr 69 million, which wos

higher than elther Cil-HB's SKr

04.4m or Saab-Univac's SKr

sequently undercut Univac,

Honeywell's last big Stati

order was for the social security

ngency in 1971, since when oil

mojor orders have gone to Saab-Univac.

Royal Canadian Mounted

According to State Depart-

ment aources, three systems will be sold to the Brazilian govern-

ment. They will be oparated by

the State police and the Secre-tariats of Public Security in the

States of Bahla, Sao Paulo and

Breallia. The export licences for

the systems, recently approved, have been under consideration since Janoary.

State Department sources say that each system is worth about 155 million. Total processing.

\$5 miliion. Total processing

power of each unspecified con-figuration is said to be 16 mlps.

implying that the mechines have multiple processors. Official

sources seid that the three sys-

say whether they were all idan-

The storage capacity of each, computer will include two mil-

lion bytes of main memory and 2,400 Megabytes of disc

61.5m. However, Slemens sub-

and the latter responded with out to SKr 57.7 million.

organisstion in Sweden

That left Siemens, whose 7.700

The purpose of the conference is to bring

about an exchange of information on the

to highlight the ways in which computers can aid development, and to eatablish a

framework for international assistance and

Ecuador, have established national com-

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#### INTERNATIONAL **NEWS IN BRIEF**

## **SEMS** plans new mini line

FRENCH minimaker SEMS plans to introduce a new line of minicomputers to replace the ageing Mitra line inherited from Cil. The new machina, de-CII-HB price cut wins £7m contract signated series S is due to appear at the end of the year or the beginning of 1979, and Is said to offer o price-performance better than that of SEMS' other product line, the Solar 16, inherited from Télémécanique.

However, concern has been expressed in France at the de-parture of several former Télémechanique employees, and at the impact that the Honeywell Level 6 mini, shortly to be built by CII-HB as the Mini 6, will have on SEMS' business.

#### Swiss deal

SWISS marketing of Digico's new MI6E minlcomputers is to be handled by Infotech, a subsidiary of Bachofen AG of Zurich, a leading Swise com-peny in industrial automation. The first machine has been installed at the company's headquarters, but a Digico machine has been running at Zurich University geology department since 1973.

## NCR \$280m sale

THE sale of NCR's Appleton
Papers division to British
American Tobacco for \$280 million, announced eight weeks ago
(CW, May II), has now been
completed NCR wants to de completed. NCR wants to devole all its resources to expansion of its computer, terminal, DP equipment and aervices

#### US takeover

GRAPHIC dispiay systams builder, Imlac, and Hazeltine, which is best known in Europe as a major OEM supplier of alphanumeric diaplays, have signed a letter of intent which will probably lead to Hazeltine will probably lead to Hazeltine acquiring Imlac. Hazeltine and imlac, both based in the US, had revenues of \$96 million and \$4.5 million respectively in their last fiscal years.

## Sabena system

BELGIAN national carrier Sabens is spending \$3 million with Univac on an 1100/12 minals which will be used to run air cargo and message switching opplications. Sabena runs its reservations on another Univac system, Air France's Alpha 3 in

#### ingerprint systems to Brazil, ciaasify and retrieve information despite fears that they could be based on fingerprints are used to infringa human rights. reportedly being built by a divi-sion of California-based Rock-Racently, the State Depart-

ment refused to permit similar aystema to be ahipped to the

From Hesh Wiener In New York.

THE US State Department has

well international and are similar to those being used by the

## \$66,000 award to Datapoint in 'equal opportunity' suit

A JUDGMENT for legal costs amounting to 468,840 plus 9% interest has been swarded to Detapoint Corp. manufacturer of intailigent termines systems, against the US Equel Employment Opportunity Commission. The Commission brought a suit against Datepoint in 1874 alloging discrimination against blacks, Maxican-Amaricana, and woman, but lost the case.

The Federal Appeals Court in San Antonio, Texas, has upheld the judgment in tavour of Date point, saying that the Loggment in tavour of Date point, saying that the Loggment in the properties of the trap to say. "The seit was brought in grant faith."

and brought "in bad fath". The award of costs is the lergest the EEOC has had to pay.

A spohesman for the EEOC would not comment on the case other than to say, "The suit was brought in cost," feth." brought in good feith."

Interdata-based IBM emulator comes to Europe

LATEST IBM-plug-compatible processor to enter the European market is a product ibm 370 programs cao be run eloogeted 2000.

BM 370 programs cao be run eloogeted 2000.

The access method used is ITAM, which set.

Interdets machine. The Duo 76 is cleimed to supports. IBM 2780, 3780 and Hasp multiples. The access method used is ITAM, which supports IBM 2780, 3780 and Hasp multir leaving workstations. Launched a year ago in the US, the machine is celled Duo 70 and was developed by Kardloa Systema Corp of Gaitheraburg.

Maryland (CW, July 28, 1977). It is being marketed in Europe by Intersystems AG of The firmwere emulator operates with the Contillate from bold interdate. Contillate from bold interdate and IRM.

Prices for the system stert at about \$50,000 in the US but will be somewhat higher in Europe.

Haske, Switzerland:

The firmwere emulator operates with the Compilers from both interdata and IBM mini, which it says will be comparable in the data of the interdata and ibm mini, which it says will be comparable in the supported and database systems avail performance to an IBM 370/158.

## **Systems** analysts on \$24,786 co-operation in computing. Two member countries, Tunisis and

## a vear

SYSTEMS analysis in the US, on average, earn \$24,786 a year, with 26% receiving over \$30,000, according to a survey by the Association for Systems Management, while the overage starting salary was found to be \$18,000.

The survey also showed that job switching is continuing to increase — 21% of those questional beautiful at the survey and the survey also showed that lioned had worked at three or more jobs, while 31% hod worked for only one compony. A slmilar survey in 1959 had found that 13% had changed jobs more than three times. Two-thirds of the respondents

had at least one degree, and 23% had a master's degree or doctorote. However, those with no university education showed a slight increase in number, but their median salary was \$23,000, as opposed to the graduates'

The responses were taken from 3,355 members of the ASM.

## Molasa mius Indian order

ding company for the international Racal Electronics group.
Sir Edward retired last year after 44 years' distinguished service in the Royal Navy, servino in the Royal Navy, during which he specialized in communications, o key area of Racal's activities.

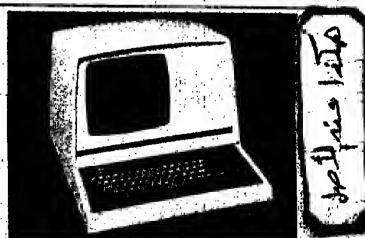
For 10 years before he became a NATO Supreme Commonder and Commander-inchief of the British Fieet in 1971, Bir Edward had responsibility for the operations and teahulcal administration of naval communications on sea and lead won by a Norwegian bureau, Computas of Oslo.

The Netional Informatics Centre is balng catabliahed In lew Delhi as an information retrievoi ayatem and national planning tool for most of tha ministries in the Indion govern-

## **Ex-NATO** ohief joins Raoa FORMER NATO Suprema

# Commander and Artifali Chief of Defence Statt, Admiral of the Fleat Sir Edward Aahmare GCB, DSC, has joined the board of Racal Electronics Ltd, the hol-

THE contract to specify the network and install the large computer system for India's Natlonol informatics Centre hos been



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## NEWS AND VIEWS FROM SOUTH AFRICA

# Dilemma over role of US business in apartheid

South Africa, and particularly that of the computer industry, is commending substentially more attention these days than ever

Two reports on this business involvement in South Africa, which represent widely divergent political viewpolats, have just been produced in the US. Both axamine the morelity of providing computars to the South Africen ragime. Eech study purports to consider, as the baels of any worthwhile business policy, the welfare of all the people of South Africa.

The casa for US computer companies refusing to do business in South Africa is set forth In a aoon to be published report former staff member of the Amarican Committea on Africa, a Naw York-based anti-

apartheid organisation.
The ACOA study, an advance copy of which was made available to Computer Weekly, looks at the extant of US computer industry penetration in South Africa and at the resulting dependency of the South African economy and the system of apertheid on American com-

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COMPUTER WEEKLY

nternational

rise ebout Computer Weskly international may be cent to

South Africs was presented by Fortune magazine in an article by Herman Nickal, a member of the magszine's board of editors. Fortune does not focus on the

computer industry, but Ita concerns and conclusions apply to ell US corporations in South Africe. Fortune comes out in favour of the continued presence of American industry in South Africs. It notes that: "It is true that in soma sectors the American roia is critical, probsbiy the most important being computer technology, where US companies led by IBM control 70% of the market."

Fortunc puts forward the thesis that US investment in the South African aconomy is needed for peaceful change. It siso holds thet "for many black workers in South Africa, training programmes in Americen companies provide a major part of their entire education." The ACOA report, antitied

'Computer aperthald; the role of US computer companies in South Africa', states that the largest computer user in that nation is the government, controlled by the 16% of the population that is White. ACOA argues that computers are used for the

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and for economic purposes.

tics, there are five US mainfreme companias with operations in South Africa, in some casas these companies sell small computers as wall. The companiea are IBM, Burroughs, Control Dats, NCR and Univac. Other US computer companies with operations in South Africa are Hewiett-Packard, Data Gsnersl, Datspoint, Computer Automation and Computer Sciences. In addition, there are several

US companies which have computers in South Africa but which do not have computer oparations there at present. Honavweil has withdrawn from the computer market, aithough It still has other corporate opera-tions in South Africa. Digital Equipment has no South African offices, but it has sold some of its computers there, Foxboro Corp. has at least two of its Fox 1 computara instailed in South Africa used at the atrategic Valindeba uranium enrichment piant, but no Sout's Africao

Historically, according to the ACOA report, South Africa was iste among the industrialized countries to anter the computer age. The first computer in South Africa, e UK one, was not in-stalled until 1959. During the 1980s the instailed basa expanded at a rate of more than 30% annually and by 1970 there were an astimated 400 computera in the country with a

value of \$100 milijon. It was during the growth period that US manufacturers came to dominate the South African markat, ied by IBM. By 1974 the total number of systems in South Africa was estimated at more than 1,000, with a value of \$365 million. And while its economy fell into a recession in the mid-70s, computers were "selling like hot cakes", with merkat growth estimated at between 20 and 30% annually.

In Saptambar, 1978, South African Interior Miniater Mulder said that there were 1,500 computers in the country representing an investment of more then \$500 million. Managament magazine of South Africa noted in its December, 1977, computer aurvey that only the US and the UK spend more than South Africa on computers as a percentega of gross national pro-

military and policy functions companies still dominate the South African market, ICL had According to ACOA's statisrepleced IBM ss ths market leader. In 1977, 1CL sales jumped

by 68%, compared with an industry average of 25%. Tha ressons for ICL's repid axpansion are not clear, but tightar US reguistions on computer sales to South Africa could be a factor. South African faars about the impact of US restrictions has iad to tha growth of Indigenous South African manufacturers (CW, March 23).

According to ACOA, in the sala of microcomputers and minls US companies face competition from the UK, Japan, West Germany, Italy and now the local South African compenies as wail. But the only companies now in South Africa

are ICL and Siemens. Fortune magazina points out that sentiment in Washington is increasingly turning against South Africa, "perticularly since the rioting in Sowato in 1978 and the explosion of worldwide outraga over the case of Steve

frames, aside from US suppliere,

The publication also cites the US Sanate report, prapared under the chairmanship of Senator Dick Clark, which sale that the abvamal record of US employers in South Africa threatened to undermine "the fundamental goals and objectives of US foreign poilcy.'

Other Congressional action lirected against South Africa ia In the works, including a Bili that would cut off government loan guarentees. This action Fortune calia "extreme."

Concern over the effectivenees of current US efforts to curb certain computer industry invoivement in South Africa led ACOA to conclude that "the current restrictiona by the Carter Administration, while posing a hindrance to the White regime, certainly fail short of any serious effort to end the involvament of US computer

companies with apertheid." computer manufacturers have been issuing public stetements in defence of their activities. The US computer companies maintain that their presence is a moderating force and that they provide jobs and opportunities for advancement for non-



## **Durban places first orders** for program terminals

THE City of Ourban has plecad which can be used as a stand-

The Detekor 3000, manufac- cuetom-designed keybeards. tured end distributed by Deta Corp, the nawly-assebilshad Office Equipment Group in Cluda up to 32K EPROM storage, Johannesburg, le daalgnad to fill up to 8K data etorage and e wand e gap in the market for deta collection and recaipting fecilities, Anderson bellavas that these lection and recaipting fecilities, eaid the company's marketing manager, John Anderson. The Datekor 3000 is a

the first order for 35 new South - sions unit or online. It can handle African-designed and monufec-tured programmeble data ter-minals which have a local content tions. Praeant options include

second caseette tape deck and computer arm of the Marcadae Future options era likely to in-Office Equipment Group in clude up to 32K EPROM storage,

could be an export market for the manager, John Anderson.

The Datekor 3000 is a pandent African States, Europe, microprocessor-beed derminel, the UK and Australia.

## Theatre and cinema ticket system launched in Australia

THE successful South African computerised theatre and cinema ticket reservation service, Computicket, is exporting its expertise to Australia, and pians are in hand to bring it to the UK, Europa and Canada.

The Auatralian venture, scheduled to open in Sydnay next month, will essentially be a duplication of the operation in South Africa which has 77 Ontei terminais in the Transvaal linked online to 32-bit interdata minicomputers used in conjunction with Di-An printers.

Computicket Australia, in which Computicket South Africa holds an undisciosed share, will go live in Sydney with 120 Ontel terminais et a cost of

The service is to be extonded

Computicket South Africa has 8/32s from being an IBM bureau customer. The conversion of more thon 100,000 program statements was, says managing director Percy Tucker, accomplished without the use of transintors or other programming alds by Compower, an independent software house, because nonc wos avallable either locally or overseas. The changeover was accomplished la a single weekend.

Tucker snys that selling the concept in the UK, Europe and Cnnada, will be lough but he says he has olrandy received several inquiries from foreign parties interested in franchisin

## Faced with growing pressure from groups lika ACOA, US Distribution agreement

ONE of South Africa's largest producers of printed business forms has entered tha fleid of

the muiti-million pound print and packaging group, Kohier mesburg.

The distribution agreement was formally signed in Johan nesburg.

Brothera, has been sppointed distributor for Memorex mag-netic tapes end discs in South

## Major battle looming for mini market

puter market in South Africa according to Peter Godsail, a director of Leonard Fine Associates, e company which specialises in computer markat research in that country.

He says the mortality rete la likely to be auppilers prepare to muscle in on the market for small computars.

"The computer market in this country."
Godseii observes, "Is constantly changing in terms of both computer supplying com-panies and an increasing flow of new, batter

'Wa have seen companies such as Honeyweil and Slamens enter the market and then depert. The British giant ICL took over the Singer Business Machines market end some of the big US companies have established themselves es forces in the merket only recently."

This year, Godsell edds, several new minis and systems have bean introduced, including Prime, which is marketed by the

, which was launched in South Africe by Data Managament Systams. He divides the currently turbulent South

African computer scene into four categories: Big international mainfrema auppliere with direct representation who have exhigh sinca the battle wili probably lead to a new round of price-cutting as mainfreme small computer markat;

Local aubsidieries of international com-

South Africa by the ameliar computer com-systems

growing out of this, minicomput international mainfreme suppliers began move into the mini erea of the market abo two yeers ago.
He sees the introduction of new produc

such as the IBM Systam 32 and System 32 the Burroughs B80 and B800 and the NCR 8100 and 8200 as a deciaration of war by big com panlas.

Ha adds that merket research undertakt panies which specialise in the production of minicomputers;

South African-owned companies which hold franchises for computers of oversees origin and which currently hold the lion's share of the local market for minicomputers; and

The rapid development over the last 12 months of a local computer manufacturing and assembly industry which is finding increasing favour in view of the threet of boycotts.

Godsell saye thet while the market for minicomputers was originally developed in South Africa by the ameilar computer computer systems.

# Australia is hit by computer crime

head in the sand and hoping that the problem will go away. Making this comment, the Sydney chapter of the Electronic Data Processing Auditors' Association says that an increasing proportion of the \$A500 million s year that "white collor" crime is said to cost now involves computers.

A spokesman for the association said it was estimated that there were about 2,000 computers in the country and about 20,000 DP staff. All hough that was small by US standards, it was worth remembering that the foreign assets and investments they control were not. Australia is reputed to pro-

duce some of the world's

most proficient white-coilar

criminals. A senior investigator

of the Corporate Affairs Com-

mission in New South Wales is

on record as saying: "Per head of population, in all spheres of

white-collar crime, Australians

rank as one of the most dis-

linguished groups of people in

The fear omong Australian computer people is, that as mat-

lers stand, there is little to deter

this "dislinguished group" from schemes of million dollar

embezzlement through com-

The 7,000-member Computer

Society of Australia has issued

computer security standards for Australian companies, which

have been endorsed by the audi-

tors' association, but within the

Australian security business the

feeling generally is that Austra-

cerned to lock the computer

than to employ expert DP audi-

tors to check the programs for

There have been very few

reported Australian computer

crimes of any magnitude, and

the Australian investing public

is less accustomed to its reulity

than are Americans. For that

reason management is more in-

clined to dismiss employees

found guilty of fraud and

embezzlement, thun prefer

criminal charges, since a scandal

mny well adversely affect the

expect much protection from

the Australian police. At a

national crime seminar last year.

delegates were told that more

and more Australian criminals

were turning to white-collar

crime - in one State alone there

had been nn increase of 220% in

fraud over the previous year -

but the lack of technically

trained staff rendered the state's

police force powerless to deal

The first seminar for police on computer crime was held last

year at which 30 officers were given a five-hour lecture. The

head of Sydney's fraud squad said: "In the end, we are going to

have people specialising in com-

But Austraila already has

people specializing in computer

crime. Last year they stole an estimated \$A10 million, and

Neither can foreign investors

stonding of the company.

puter crime.

criminal activity.

## NEWS IN BRIEF

## **IBM** profits doubled

A DRAMATIC surge in IBM Australio's profits has been reported for 1977. The big Improvement is stributed to the high level of outright snies.

Profits at \$A16.55 million after tax of \$A13.79 million were more than double the 1976 figure of \$A7.75 million nn a turnover of \$Ai619 million, up from \$Ai20

#### PoS network

WITH orders for 760 NCR 2151 point-of-sale terminals, 42 NCR 796 VDUs, 74 NCR 260 terminals, and four NCR 725 minicomputers, Australian department store group Wallons has begun its plan to install a major PoS network at its stores over the next three years. The PoS network will be linked by Post Office lines to an NCR V-8550 Criterion system in Sydney. and it will enable Waitons to monitor and control profitability, Inventory, sales tranda, and advertising more efficiently, as well as improving

#### Latin exchange

WHAT is claimed to be the first digital telephone exchange in Lotin America will be installed in Caguas, Puerto Rico, and become operational this year. The contract worth \$2.2 million is for an EAX 3 stored program conirofled exchange switching 3,000 lines from General Telephone and Electronics Corporation In the US. it can be expanded to handle up to 60,000 lines.

## Egyptian contract

A El MILLION contract for o natural gas distribution control and monitoring system has been won in Egypt by Westinghouse Brake and Signal of Chippenham, Wiltshire. The contract is in connection with the Abu Qir natural gas distribution project, and will include twin Digital Equipment PDP-11 minicomputers running the Westing-house Wesdac software pack-

#### Conference Marketing deals in Canberra

MAGNETIC tepe transporta produced by Digi-Data are to be inarketed in the Benelux coun-CANBERRA Is the venue of the Iries by Megovolt of Holland and . in Norway by the Os between August 26 and September 1. The programma will include workshops and short

## Dublin office

To handla growing business in the Irish Republic, Data General has npened a Dublin office at St James' Housa, Lower Baggott Street Sales and software support had previously baen provided from Manchaster, but the entire oparation will now be carried out locally.

gramme includes vialte to the Orroral Valley Tracking Station, the Snowy Mountains, and the Sydnay Noisn Exhibition. The basic conference fee is \$140.
For further dotalla apply to
Eighth Auetralian Computer
Conference, P.O. Box 448,
Cenberra City, ACT 2801.

courses, poster esselons, an exhibition and e personel com-

puting feir.
The extensive social pro-

## Fujitsu subsidiary profit

THE Australian aubsidiary of \$A3.48m loss last year. The prointo profil for the first time in
the variation aubsidiary of \$A3.48m loss last year. The prointo profil for the first time in
the company is not forecasting the year to March 1978, but still much more for the current year. sacumulated lossas of the turnover for the current year. SA9.03m. which include a believed to be seeking \$A12m.

Australian professional bodles know that those who hope to combat their larceny must match their skills with rather more than a few hours instruc-The reality is that Australian

staffed or trained for the lask; But, even if Australian management did train their staff in omputer securlly, would the Australian courts convict the At a national seminar on white-collar crime a former director of the UN crime pre-

police forces are inadequately

vention programme said that Australian criminal courts were 'grossly inadequote" in dealing with such crime, and he urged a change in the jury system to include technical experts. His argument is particularly valid in the cases of computer fraud.



## Look what happens to cats Down Under!

Walen is to have their pedigreo registered on an ICL 2803 installed by the Stote's Royal Agricultural society. The records ore put on file with the help of Checkmaster, o real time animal registration package from System Aid of London. Checkmaster has also been used to register Australia's padigres dog population, but in the UK cows have been the only population, but in the UK cows have been the only customers so fer. The Friaelan Cattle Society uses it for its records. Here, Nick Weterhouse managing director of System Aid, and Felicity look at one of the certificates that the system produces for Aussle cots.

## NCR terminals for Victoria store

AUSTRALIAN department store group James McEwan has installed 240 NCR 255 point-of-sale terminsis in 25 alores in Victoria. These are linked to an NCR 726 minicomputer in each store, and the company plans to form a network over dial-up telephone lines to a 192K NCR Criterion 8550 at its warehouse in Melboume

Value of the total system is about £1.5 million. Sales of each item are reported and the effect of price changes can be gauged quickly. Gross profit is reported weekly, and this avoids the laborious ask of retail Inventory.

The aystem also provides better cash control. credit checking and customer statistics, according to the company.



## Most companies buying computers don't know what they are doing

buying computars have contacted only one manufacturar. This is strange, taking into account how large their investment is. Because we do not believe that anyone can be sure of the right choice without knowing what. other firms can offer. -

Big is not always best. Although Norsk Data is not among the biggest, our NORD computers have often come out.

nrst in the hard infamational competition With the NORD-10/S, associated peripherals and softwara programs, we can offer flexible and economic computer systems for most dataprocessing sctivities. A NORD computer system will never be too limited to meet newrequirements. The initial installation can be extended as new demand grows. Give us a call and find out how we can co-operate.



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By Fred Lamond

## MARKETVIEW

Since Amdehl delivered his first 470V/6 processors from independent manufec- software in microcode, or charges for fu- in IBM compatible processors, and provide to the account of the compatible processors, and provide to the account of the compatible processors. processors three years ego, at least six turers? Can the demand support so many ture releases of its operating systems softother menufecturers have ennounced prodifferent competitors? Will they be able to were? Whot sort of n growth poth have the and supported in Europe, and those in cessors that can execute IBM 370 machine follow IBM in price cuts as drastic as those users of independent 370-compatible pro- may be in the future ofter an initial limit. code, including no less than three new ones that accompanied the announcement of the cessors? in the second quarter of this year. is there a top of the ronge 303X series in 1977? What In this Merketviaw, Fred Lemond discusses the background to the current boom cuts its innovations to their levels.

on the North American morket, sadatute

tem The displaced 18M 370 m

user object code programs tob

executed unaltered even wit-

ощ any recompilation. And

genuine alternstive economi

source of supply for their cents.

processors.

## The IBM compatible processor market

# Is it boom or bubble?

user base is hardly a new one among competing manufac-marketed the 360 Assembler turers. Almost every minicom- compatible P1000 series on the turer offers IBM 370 data exchange compatibility todsy via compatible systems have only 2760 and/or 3270 bi- implemented the IBM 360 and synchronous communications 370 user instruction sets, howprotocols, if not IBM 3741 com- ever, but defined their own patible diskettes or nine-track "privilaged" instructions to

magnetic tapes.

Honeywell, ICL and NCR all offer general purpose computer systems that are data atructure compotible with the 1BM 370 has thus always involved the range at some price perfor-mance levels, which usually commands in his source procarries with it a measure of Cobol and Fortran source program compatibility as well.

Even IBM Assembler compatibla computer systems have a 16 than a conversion from DOS to year history behind them. Honeywell announced its 1400-compatible 200 series in 1862, and English Electric Computers and Slentens their 360compailble System 4 and 4004 series in 1865. Siemens still

Continent from 1968 to 1973.

All these Assembler-

lmplement their own operating systems. Replacement of an IBM 360 or 370 system by one of these Assembler-compatible aysiems grams before recompiling them to run on his new system.

This did not involve the user in any more effori or expense OS If he stayed with IBM, and was frequently easier. Both Sie mens and Univac have thus scored mosi of their IBM user "knock-offs" among 360/40, 370/125 or 370/135 users who had outgrown DOS or DOS/VS

But users of IBM's medium to large systems who had already undergone the cost and effort of converting their source programs to an OS operating en-

Manufacturer

Distributed and

Equivalent modele

(Number of

CPUs/eyatem

Operating systems

in bracketa)

msintained

In Europe by

THE idea of offering "compation been joined since 1973 on the users attracted by the longer further JCL command converpering and main mentury under whatever operating is the longer base is hardly a new one with its Series 80. Philips also offered by both Slemena and operating system for the sake of other than IBM. marginally cheaper hardware What Gene Armdahl plun-

Fujitau

Siemene

M200 (1)

OS/IV-F4

M200 MP. (2-4)

Amdshi

Amdahi

470 V/7 (1)

470 V/6II (1)

470 V/5 (1)

OS/MVS or

OS/VS 1 or

rentals or purchase prices. They were thus, until 1675, locked of machine code compatibility: effectively into the IBM 370 pro- one that is no longer confined to cessor range, even though they the user instruction set but in-might atili order their terminals cludes the privileged 1BM invironment have mostly been and communications proceastructions as well, and therefore unwilling to contemplate a sore, and sometimes even their allows user's systems to be run

Itel

Amdohl also ploneered andegree of marketing specials Hitechi tion. Instead of feeling obliged incur the enormous R&O oc. for a complete family of pros sors of all sizes end maichig peripherols to compete again iBM, he has specialised in b manufacture and merketing large central processing un and their memories; those equal or greater power tolker IBM 370/168 and so per M180 II (1-2) AS / 6-7032 (1-2) mance competitive with them IBM 3032 and 3033 process His CPUs are "socker compatible" with the IBM 5 OS/MVS or processors that they displace.19 OS/VS1 or that life users can relain the? VM/370 IBM peripherals, or older perlpherals from a pho compatible manufacturer.

manufactures the 370- multiprogramming capabilities, compatible 7.000 series and has or among 360/20 or System 3. Table 1. Large and very lerge IBM compatible processors

3033MP (2)

3033UP (1)

OS/MVS or

OS/VS 1 or

3032 (1)

No less than six other system is destined to become the manufacturers have followed defacto industry standard of the Amdahl in the lost two years in 1980s, and refuses to market any offering IBM machine code alternative to it for use on his compatible processors, and all have been equally specialised in the livery proud of its OS/title offerings, at least to the IV-F4 operating system, for North American and/or which it not only claims com-European markets. Four US plete upward JCL compstibility manufacturers — National with IBM's OS/VS I and OS/ Semiconductor, IPL Systems, MVS, but also a 25% job Two Pi, and Magnuson — have In turn announced medium-size with the IBM 370/138, 148 and/ or 158 olias 3031 processors (see Table 2), leaving the large CPU range of Amdahl.

Out competition for Amdahl in the large to very large IBMcompatible processor market convert them first. The M-200 has come more recently from the two leading Japanese with a complete range of mainframe manufacturers Hitachi and Fujitau (see Table 1). There ora now two diatinct IBM-compatible processor replacement markets with o different set of competing manufacturers in each.

Amdalti's six imitators have gone even further in their speciallection and confined themselves easentlally to aystem design and/or manufacture with the exception of Magnuson, nal CSS, a time sharing comwhich markets its recently announced M-80 series directly on the US West Coast and some other selected US areas. Otherwise, all six companies have left the marketing, installation and engineering support of their systems on both the American and European marketa to OEM series in the US since June 1977. componles with established And if two of the leading PCM

sales and service networks. Thus Itel, a leading third party tributors in Europe, Itel and leasing company for IBM systems and a distributor of IBMcompatible memorles, disc drives, printers and terminals since the late 1860s has rounded off its product catalogue on both the American and European markets by announcing the National Semiconductor-built AS/4 and AS/5 series in the supply of ... cen-November 1976, and the Hltachi-built AS/6-7032 a year later. It has also promised to announce smaller AS/2 and AS/3 processors towards the end of this year, which will probably be based on National Semiconductor's recently announced C400, now that NS has decided not to market this sys-

tem itself directly to end users. In May, the German mainframe manufacturer Siemens. whose IBM-Assembler compat-Ible 7.000 series reaches only up to 3031 performance level, announced that it would shortly start marketing under ite own abel the Fujitsu M-160 11 and M-200 systems that offer respectively, 1.1 times the performance of the IBM 3032 and 1.4 times the performance of the IBM 3033. It will be offering these in West Germany, and probably also in those other European markete where it has an established sales and maintenance network for its own 7,000 serles: Belglum, Netherlands, Switzerland, Austria, and per-

haps also Italy and parts of rujitsu ahould compete odd, since Fujitsu has a minority aharsholding in the Amdahl Corp and also aupplies Amdahi with most of its componants ond eub-assambles. The Amdahi and 166-3 replaced the aarlier 158-1 and 168-1. Corp and also supplies Amdahl ond eub-assambilas. Its M-200 and M-180 II processor dasigne hava both baen devaloped from Amdahl 470 V/6 with aevan ad-

Tha break between Amdahl

grated adopters and bytemultiplexer channel of an 10M 370/138 and 148. Both Magnuson M-80 and Notional systems. Fujitsu, on the other Semiconductor C400 main memory, for instance, can be expanded to a moximum of 16M bytes against a current maxipeting medium size systems also throughput improvement over

iBM would require CPUs to be exchanged at least once.

Many consultants and IBM users are, however, asking how long can the 10M-compatible processor manufacturers maintain their advantoge? What will happen to them when IBM mum of 1M on the 370/138 and cule its processor hordwore 2M on the 370/148. All com- prices to their level, and/or an- price that it had charged for nounces new unbundled offer field-expandability over a operating systems or extensions ago. It thereby brought their

ware microcode?

As far as the effect of ISM price cuts goes, we aiready know the answer. When IBM replaced the 370/158 and 168 processors by the almost identical 3031 and 3032 processors in November 1877, it priced these new models of less than half the their predecessors until a yesr price-performance range where with sections embedded in firm- prices some 10 per cent below

Aindahl and Itel models. But this sharp price cut caused a flood of orders for the new 303X processors from processing-power hungry users that IBM will be quite mable to satisfy out of its current production capacity in under two to three years.

While a few users have can

Turn to page 36

Menufecturer	I8M	National Semiconductor		tPL Systems	Magnuson	Two Pf	
Dietributed and melnteined In Europe by	16M	(1) ftel	]2			CSS Internetions	
Equivalent models (Number of CPUs/systeme in brackets)	3031 (1) 148 (1) 138 (1)	AS/5-7D31 (1-2) A8/4 (1-2) (A8/3)*	_ C 400	Omege 480-fi j1) Omege 480-l (1)	IM 80/5[' M 8D/4 (1) M 8D/3 (1)	 CS8 3200 (1)	
Operating systems	Any I8M	Any ISM	Any 18M	Any i8M	Any i8M	VP/CS8	
Maximum main memory capacity on largest model in table (bytes)	8 M	8 M	18 M	2 M	18 M	4 M	
Smeller models field- upgradeable to ferger models?	No	Yes AS/4 to AS/5		Yos	Yee		

Table 2. Medium to lerge 18M-compatible processors. Note: 'Mode promised for ennouncement by the and of 1978.

This is Ino third edition of "CORAL NEWS" which took over from the CORAL Bulletin se the medium of communication of CORAL information to existing end potential users of the lenguage. CORAL NEWS eppsers every quetter to provide users with up-to-date information news end opinions. Items for inclusion chould be sent to CORAL Press Co-ordinetor. NCC Ltd., Oxford Road, Menchester M1 7ED. Standardisation

CDRAL 88 is being stenderdised by 851's working group concerned with programming languages for industrial process control. The language is already an official UK defencestandard. A revised draft standard will be produced soon and will be published as a draft British Standard, incorporating the original CORAL 68 official definition.

#### **CORAL Availability**

Manufacturers and softwere houses continue to ennounce CORAL 66 compilers. From the lour compilers evailable in 1969 the number has grown each year to the present total which covers 38 chine renges end a lufther 21 ere reported ee being in

Compilors are available or under development on mechines from the following manufacturers' renges. CIL, Computer Automation, CTL, Date General, DEC, Ferrentl, GEC, Honeywell, I8M, ICL, Intel, Kongsberg, Modcomp, Motorole, Nord, Perkin Elmsr. Plossey, Prime, Renk Xerox, SEL, Smiths Industries, Sporry Univac. Texas Instruments.

#### CORAL on Chips

GEC Somiconductors have received IECCA approval for their RCC 80 CORAL 68 compiler for the Intal 8080 series of eight bit microcompul Other CORAL 86 compilers evailable on

nticroprocessors Includo F100-L 18 bit microprocessor from Forranti Toxas Instrumunts 9900 series from Systems Designors Lid

Compilors or cross compilors are under development for the Motorola 6800 and the Plessay Minroc. For up-to-clate dotained information on CORAL 86 compiler evailability ring Misivein (06845) 2733 eat 2165

A nsw publication this month is "CORAL 66 Programming by J. T. Webb, one of CORAL's pioneers. Apan from tleschang the language, the book gives guidalines for good programming proctice. Still everlable is "A course in standard programming profice. Still evenable is. A course in stemper CORAL 88" which is the notes of the NCC CORAL Course. oth books are E5 each and available from NCC or any achnical bookseller.

#### A CORAL CASE STUDY

An Oxlord Medical Computer Centre project relies on CORAL 66 for its reol time control softwore. The project is concerned with petions cere edministration and hes plenning and research date being produced es e

In the system each perticipating hospital le linked to a minicomputer running the patient edministration system. A databese on another mini conteins summaries of patients case histories. The machinas used ere CTL Modular Ones for which RSRE wrote the original compiler. Vieual display terminals provide direct access to the computer and the real time system permite information on petiente to be updated as evente happen.

Staff in the Patient Administration Centre Sntor patients detalle before they onter the hospital. Their edmission, location, they occur. At envitime, the system has case deteils of the patient but can give nformation for research or edministration, For example, a bad status ropon allows the edmissions office to

Apart from elding quick end efficient nospital administration the mini-computer ayatom seves considerable coata yot providos a real time capability.

locato apare bede et shon notice.

apecial committee has been set up to aleguerd confidentiality and one method Of respecting privacy is the use of naeswords for identification and

Caring with Cotal:

#### Training

Colleges in I:OItAL life are routelerly being ultriod by naviral organisations including CCOB, Fortardi, GFC NCC and SDL NCC is row running the float area program design row running the float area program design curries what is timy developed for the CORAL 6 group. The course duals with structured things and program quality, documentation

#### MASCOT

MASCOT

A furth time systems development and runting environment for CO11AL OB is on its way.

MASCOT - Merhalt Approach to Systems CO11AL OB programs for be breken down into independing parollul activition. The solvens communicate will each other vis formal interfaces and access mechanisms and statched and controlled by the MASCOT kernel. As well no providing excellent run time control. MASCOT oilews parellol programs to to developed independently and to be formed. into en oxecuseble ovotem.

MASCOT dovatopment is being controlled by joint industry — MO 0 group with regiot with peckages being undertaken by soltware haus including CAP. Soltware Sciences Ltd. and Including CAP. Soltware Sciences Ltd. and systemo Designers Ltd. A MASCOT elliciti
dolinityon has been lasued and is evallable from
ASRE Commorcial products using MASCOT
should be evallable leter this you and there is
colrosely a two year history of experience in
proving MASCOT in defence real time.

A workshop on MASCOT is being planned by Inlotech for later this yeer.

#### **USER GROUPS**

The urgs to meet end discuss the language ha not passed by the CORAL community The British Computer Society s. CORAL 68 specialist group maets about every & months term Soptember to May



Published by NGC on behalf of the Department of Industry, sponed of Con

tral processors rounded off their product lines with IBM-compatible processors, then their other competi-

tors - Memorex, BASF and

Storaga Technology - will be

fighting for the privilege to

for the first time, a

genuine alternative

economic source for

This is the operating system under which the M-200 and M-

180 II systems sold by Siemens in

Europe will run, so that their users will have to recompile

their source programs, but

and M-180 II will also be sold

Japanese-built peripherals and

unlike the Amdahl 470V series.

be available in close-coupled

The medium range systems built by IPL Systems, Two Pi and

only in the US, but their appea-

rance on the European market is

generally believed to be only

matter of time. The Two Pi 3200

is marketed in the US by Natio-

pany, whose CSS International subsidiary has sales branches

and time sharing access nodes in

Division of Control Data has

marketed the IPL Omega 480

memory and periphernis dis-

Europeon citles.

London and many other

Memory and Peripherals

Magnuson have so far been sold

multiprocessor configurations.

market the Magnuson M-80 series in Europe.
The rapid development of this IOM machins code compatible processor industry has been due to the same reason which prompted the earlier growth of iBM-compatible peripherals manufacturers from 1965 and of PCM memory manufacturers from 1969, le a growing gap between IBM technology and prices and possibilities offered by the latest state of the art. Current IBM processor models are but little altered variations of late-1960s designa firat announced in

In the case of the top of tha range 370/158 and 168, their prica gap hod become all tha wider as IBM had actually raised thair CPU prices — by 40% in in Europo against Amdahl via a 1872 when they replaced the different distributor is rather little different 370/155 and 165, and a further 15% at the begin-

All the processors offerad currently by Amdahl and his six the earlier M-190, which waatha grated and, tharsfore, mora imitators use more highly inte-Amdahi 470 V/6 with sevan additional privileged instructions.

They must thus bear more than one passing reasons and memorias than the IBM 370 and 303X proo passing reaemblance to the Amdahl 470 V/7 and 470 V/5 competa.

agoinst which they will be competing, although these have been separately developed by Amdebl from the Amdebl from the separately developed by a sep been separately developed by 3200, and Magnuson M-60 pro-Amashl from the original 470V/ cessors use a high-spaed minicomputer bus architectura which makes it much easier to ond Fulltau marketing in Europe axpand their main mamories is due to a diffarence in mar-keting philosophy. Amdahi ba-lisves aomewhat dogmatically that IBM's OS/MVS operating tems to tham the inte-

**MODEMS AND DATA COMMUNICATIONS SYSTEMS** MANUFACTURED IN BRITAIN BY

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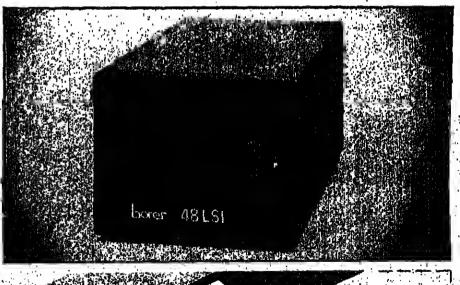
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Kingham, Kahira RG11 20L, Jand	Address		Tel	7

HOW fsat will the 470V/7 be when it is shipped next month?

"More than 10 per cent faster than the announced speed," says Dr Gsne Amdahi - and possibly significantly faster than even

To maintain customer con-Accepted by most observers fidence, the Amdahl computers as the faatest general-purposa computer in the world, the not only have to run faster than anything eise in the world; they have to run more reliably and, if 470V/7 will leave Amdahl's Sunnyvale, California factory they break down, thay must help technicians with the repair the company'a 460V/6, eaaily twice the speed of an IBM 370/ ceeding every industry standard 168, and, depending on the way you measure things, oa much as that Gene Amdahl could aell his firat offerings, and it will be 50 per cent more than IBM's most powarful procesaor, the that he keeps the queue of customers lined up at his front door. For Amdahl Corp, the advan-

The improvements in the computer's design will not delay first customer deliveries.

We announced that we would ship in August," recalls Dr Amdahl, "and we'll probably ship the computer at the end of that month. We will use all the time between now and then to improve the limiting critical

So far, the affort to locate bottlenecks in the computer system and eliminate them, has performance will come without any penaities in price, reliability or ease of use. The search for further annancements to tha machine continues on a daily

First, Amdahl Corp personnei fire up the machine and load it with work that typifies the mix of problems users will be solving. Then, engineers monitor the various paths information takes through the machine to see where any time might be gained by redesigning a circult. Finally, the changes must be implemented and further testing done. There is no certainty that an improvement in one function will actually improve the sys-

Amdahl explained the process using hypothetical examples.

could well be that the middle bit of an address path involves a time consuming test to see if you are crossing aome boundary in the machine. That might be the critical path, the thing that takes longest to do. So you redesign that, and it is no enger the critical path. New perhaps the critical path is when the data comes out of the cache and you have to check to see which of several items is the one you want. So you redasign that part of the system."

Wall Street calm THINGS have been pretty Digital Equipment, for boring on Wall Street. The stock market has no clear direction and the stock analysts, puzzled by the recent decline in the market after some sharp rises, have yet to explain fully inves-

With no crises on their minds. the financial analysts seem lost. They have even become tired of complaining about the seeming hypocrisies of the Carter Administration. Interest rates have moved upward and inflation shows no sign of

Beneath this caim surfaca, however, there are some indications that investor confidence in the computar business is not as great es the order backlog that of the charge in short interest nost vendors claim to hava.

example, which has had its share of trouble on Wall Street, has been suffering further the erosion in its stock value. At a time when the company may need to raise funds for expansion, this does not bode well.

Honeywell, which only gets about half its revenues from computers, is another company that may be hurt by present economic conditions in the US. Construction, sensitive to interest rates, is falling. Housing starts are off quite a bit and are expected to continua to alide and with that gosa the growth of Honayweii's largs business in heating/cooling system components. This may explain some in Honeywell stock,

Hesh Wiener talks to Gene Amdahl about the way he is planning to improve the performance of the Amdahl systems

# Amdahl says the 470V/7 will be 10% faster than announced speed

run s three-ring circus of paralthe computer industry slowe during the next few years, Amdahl Corp, like its rivais, must continually seek improvepany is hoping to build faster and more dense circuita during

the coming years. Amdahl is also

working on a way to improva

lei processes; it must simult-

aneously monitor its every

function in the event of some

taga of seiling computers that run IBM softwars is accom-

panied by a risk: should the

company fail to delivar com-

puters that meet or exceed cus-

tomers' expectations, users can

awitch back to IBM without

The risks of mainframe ven-

turss may also be increasing

because prices have been falling rapidly and will continue to

drop. When Amdahl first went

into business, the IBM price

umbreils was a lot bigger than it

frame market since the an-

and, Amdahi believes, this has

enabled the company to keep

with the (changes in) techno-

logy, and at this time wa can

consider most of the computer

market essentially to be stsr-

ving.
"It's an elastic market ao fsr.

it may get sated, and the market

aize could drop, but it's going to

end up at a much higher level

But the rapid pace of techno-

iogical progress has led several

vigorous competitors into the

fray during the past year. Price

wars could occur, as they have

in other markets for alectronic

equipment.
"We may find," observes

Amdahi, "that the revenues

might not grow because prices

are coming down and the slas-ticity might not be quite high

enough. Thus for the history of

computing demonstrates that

reduced prices result in greatly

expanded markets. Neverthe-

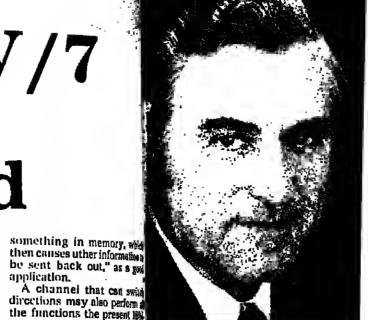
then It has been in the past."

ment of the System 360

The channel improvements will involve, according to" Amdahl, "paired streams of i/0." Today's channels cannot reverse very rapidly, and thus, at electroic speeds, they seem to be one-way paths, which limits the in ond it must be enmpared to

nels, which today are functio-nally identical to IBM's. applications. A channel that could move dota in two direccould mova dota in two directions very rapidly would permit interactive links between courputers and peripherals.

A channel that can swild directions may also perform Amdahl cites banks' checkthe functions the present IBY processing muchines, where "a stream of information is coming



the new functions simply u. ... "we can consider most of the computer hance the industry standard" esentially to be sterving."

# Call for world alliance on transnational data flows

THERE is growing concern throughout the world about the effect of transnational data flows but most countries have spent too much time identifying, rsther than solving, the pro-

That was the view expressed by Gustaf Adolf Westman, head of the Swedish Data Inspection Board, at a three-day conference in Washington, organised by Information Gatekeepers of Brookline, Msssachusetts.

Although the conference festured spsakers from the US. Sweden, France, Germany and the UK, it was left to Dr Peter Robinson, chairman of the Canadian government's Interdepartmental Committee for

provide the only attempt st trying to quantify the problem.
Using data published esrlier ports will have a detrimental this year by his government Dr Robinson pointed out that comeffect on Canadian job oppor-tunities, he added. The governputing services imports to ment study indicated that the Csnada totslied about \$155 milnumber of jobs created outside lion in 1975, s value which Canada to meet the country's represents shout 30 per cent of requirements smounted to the services obtained by Csnaabout 4,400 by 1975, or some 4.5 dian users from outside their per cent of the DP-related jobs in own data processing operations. "If present trends continue," he Cansda at that time. By 1980, Csnada predicts, that sald, "Imports of service will reach some \$560 million by 1980. about 41 per cent of outside ser-

number will swell to some 11,000, or shout g psr cent of Csnadian jobs, and by 1983 to sbout 23,000, or about 14 per vices, and increase to some \$1,500 million by 1985, about 52 cent of jobs. per cent of outside services. At the same time that Canadlan computing is being dis-placed, Dr Robinson noted, user

"It is not very likely that we will be able to offset this growth Computer/Communications, to in imports by greater exports demands are increasing. Uaers

vices required in 1975. These costs are expected to rise from the 1975 level to about \$5,600 million in 1980, and to some

\$9.500 million in 1985.

Canads's problems, Dr Robinson said, there is growing concern shout the storage of per-sonal data on Canadian citizens outside the country, and particularly in the US. Quoting from s report prepared by the government's Task Force on rivacy and Computers, Dr Robinson touched on an arsa that is very "sensitive" to Canadians: "As a sovereign state, Canada feels some national embarrassment and resentment

Canadians being stored in a foreign country. The Canadian government data flows. feels it is time to act on these

sttorney and communications can public "abhors" regulation, partly because the public has little faith in the faderal government to solve problems. But at the same time as the US is countries, Dr Beckler urged each nation to strive for the former and avoid the latter. "It is impossible to ovarstate that the same time as the US is he said.

To further exscerbate

pushing towards de-regulation he contended, other countries are becoming more regulated. "America needs to awaken to the realities that we alone have

not come to grips with a national information policy, a trade policy or even a transborder over increasing quantities of dato flow policy." Eger asserted. He also appealed to all often sensitive data about nations for "an alliance in world policy" regarding transnational

A similar appeal was made by problems, Dr Robinson said. Dr David Beckler, director of "But what form new restrictions, if any, might take, and to achieve what objectives are by no means clear."

Dr David Beckler, director of dustry for the OECD in Parls.

"There is a very small step between data protection and dsta John Eger, a Washington protectionism," he said. in his plea for greater harmony among consultant, said that the Americountries, Dr Beckler urged

## 'Information quality council' demand

Study, one message comes manngement

resources is seriously daficient. Tha first five draft raports cama from teams that studied the DP environments of standarda, parsonnei, smaji out before the end of the summer, deal with DP in general government, national security, scienca and tachnology, oparational management and

central policy.
Tha human rasourcsa taam, which was charged with finding of chastleing the government for commissioning redundant studies that serve no greater purpose than to collect dust in

oureaucrats' offices. reference previous findings. The art experience and background.

and takes action.
"Most of the previously published, reports are excellent; published, reports are excellent, positions are open, the team in agreement with respect to claimed, the government's findings and, where there was ability to rectuit and retain commonality of scope, largely in competent DP people is severely agreement with respect to their between the common common with respect to their people is severely. commonality of scope, largely in agreement, with respect to their recommendations, the group

five of an expected to task force cil'a stated oims would be to reports comprising the US improve the quality of informa-Federal DO Reorganisation tion and the information through loud and clear: the throughout the federal governmanagement of the govern- ment; to promote communica ment's information technology tiona and diolngue between federal agoncies; to promote the informed application of data processing; and to promote ond facilitate the transfer of techno-

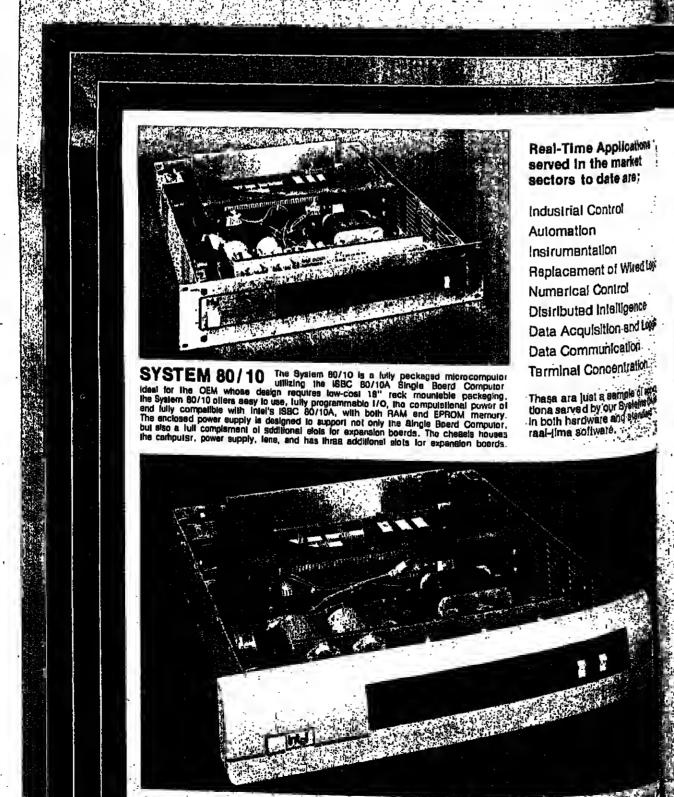
logy betwaan agencies. faderal agencies, human . Tha major thema of the perresources programs, and sonnei tsam's report was that acquisitions. Tha remaining task the hindrances to an effactiva forca reports, which will filtar faderal DP environment ara peopla, not hardware. The fact is, the report aaid, that tha government is not able to jure tha nation's most capable DP

that the process of examining ways DP could improve the and oertifying a candidate and oertifying a candidate imagin the Civil Service commercies, took on the added task suming and involves too much "red tape". Salaries for entry-level DP personnel are \$2,000 to \$5,000 lower in government than in private industry. Job can-While the other four task- didates have no central place to forces politely acknowledged in visit to detarmine what poeltions their reports that numerous ore actually available. other atudies aiready existed on obsolescence of many federal their assigned topics of research, DP systems adversely affects that thay nonetheless proceaded to government's ability to attract or personnel with state-of-the

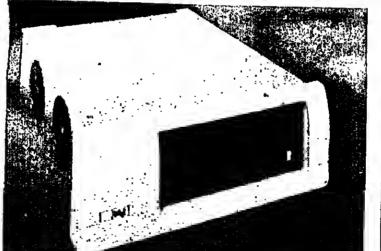
human resources team was the Moreover, the personnel task-only group to come to grips with force complained. "There is no the issue of redundancy. It said consensus within the federal the President should declare a government on where data promoratorium on further duplicassing should be placed organizative studies while the government isationally, nor what role it ment "consolidates the best of should play in the management what has already been done" scheme of things." Since DP personnel are frequently over-looked when top management

The lack of occountability for the auccess or failure of DP As a long-term solution the procurements was a per poseye of team urged creation of a President's Councilion information which holds that private in Quality, which would operate as distry would never to enach auch a situation

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and peripharai end DMA Controllars which are all compsible with the standard bus... the Intel MULTIBUS. rotolyping packagss, modular backsnd chassia ara siso svallabla io simplily product devslopmant. Intal's RMX/80 Raal-Tima Multi-Tasking Exaculive with diakatte fila systam,

arminal drivar, analog drivar, high spaad meth unit driver and dabugga spacifically for the ISSC 80 series. Tha OEM Compular Systams produois and Intal's Microcomputer components are supported by the most advanced system davalopment

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theas development loois le tha.

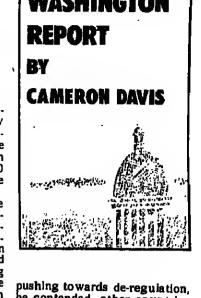
Intallac Microcompuist Davslopman Syaism, its in-Circuit Emulators, and its complement of advanced developmani soltwars. Sollwara packages available for use directly on the Intalisc Systam includa a rasidant ralocalabla and linksbia macroassamblar, a tax-adilor, opersting

systama, and utility programs.
PL/M, the high-level programming language intel apacifically designed for 8060 based systems, is also available resident on the Intellec-

system. The PL/M-80 compilar providea the capebility to program in a natural, algorithmic languaga, shd silminaisa the naed to managa ragislar usage or allocata memory. PL/M-80 program modules are ralo-catable and linkable with other

languaga program modules.

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## Donald Kennett reports from Italy

# International nature of Honeywell's Series 60

THE international nature of Honeywell's Seriea 60 range of systems is highlighted by the enhancements that have been introduced for the Level 62 (CW, June 29). Level 62 was designed in Italy and is being produced at a factory in Caluso, near Turin, with 80% of the production exported. with Milan and Salerno univera-

France, Leval 64 in France and the US, and Level 66 in the US. The UK also participated in the software design for the series and manufactures Level 66s in Scotland (CW, April 25, 1974).

Manufacture of Honeywell computers takes place in Newhouse, Strathciyde, the US, France as well as in Itoly. The Italian operation has offices and a research establishment in Milan, and a production plant at

Honeywell Information Systems Italia markets all Honeywell products in Italy, Iran, Turkey and Yugosiavia. The Caluso plant produces Level 62 computers, serial matrix printers and magnetic tape transports for the company's world market.

The oldest of these lines is a tape cassette deck that started production in 1973 and has reached a total of over 10,000 units produced. For sheer numbers, though, thia ia exceeded by the aerial printer. which, although it is the newast product, has reached a total of 14,000 since 1975.

These are being produced at a rate of 300 a week, but the alm is to increase output to 2,000 a month. This compares with a figure for Level 62 proceasors of 80 per month. The

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computer supplier to find distributors for e ronge of dets entry, remote batch, real time and distributors computing systems in the United Kingdom, Netherlando, Austria and Switzerland,

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reason is that this printer has found a home with Honeywell'a whole range of mainframes and minis and also sells to the OEM

market. This is because it can be configured as a console printer, a iocal or remote terminal or output printer and has a choice of 30 keyboard versions a..d 50 characier sets.

The Level 62 itself has four models, the 62/20, 40, 50 and 60 ranging in price from £45,000 to £250,0000. Differences between them include size of msmory, amount of automatic error correction, timing and firmware.

Since production atartad in 1974, changea have been made to keep up with latest techno-logy. From atarting with TTL and 1K mamory chips Level 62 now makea use of 16K memory chips and other LSI devices so that at 80K bytes, the current basic ayatem memory exceeds the orginal maximum. The maximum has recently been extended to 512K bytea.

HISI employs 3,700 out of Honeywell's worldwide total of 95,000 al aff. It has 55 fiald engineering offices spread throughout Italy but the biggest concentration of people is in the north, with 1,200 at the Caiuao roduction plant and 550 at the R&D centre at Pregnana near

At the research centre half the designers and anglneers are graduates and they use 22 Level 62 systema in their development work, making it the largast com-puter centre in Italy. The Level 62 was designed and

devaloped there, as waa the G100 aerlea bsfore it, and the team has over 500 patents to lts credit. Patent licences hava been sold to the US and Japan, with Japan starting to manufacture Level 62s under licence.

Research work goes on in collaboration with univarsities and this laa pattern kapt up ainca the functions of R&D, manufacture

drive design with Bologna. Five international software houses have also had people working at the research centre in co-operation with HISI. The production workforce of

Itles, medical applications with

Florence and Pavia and disc

1,060 at Caluso haa an average of 0 yeara' service in spite of Iwo changes of ownership in the 15year life of the plant. The average age is 35. About half the number is technician grade and seven per cent are graduales.

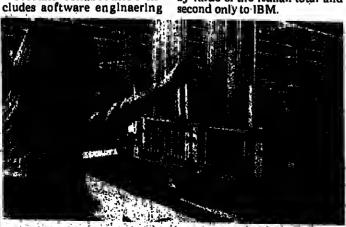
The plant uscs a number of automated processes including numerically controlled and multiple drilla, programmable component aequancing machinea. automatic inaertion of chips and diacrete components and automatic backplane wire Names on these machines in

clude Graziano on the NC drilla, Plurima on the multiple drills, Behrens on the punch pressea and Gardner Denver on the wire wrap machines, but several automated processes hove been developed by the company and based on the last product line, the G100 series computers. Four are used, for example, on backplane testing ond component sequencing.

Current development involves using Leval 62s in the automa tion process and for a termina network providing online information

Customera in manufacturing industry already use Level 62 in their internal networks, the biggest being Olivetti and Flat. In fact manufacturing industry is the largest user of Level 62, accounting for 37% of Italian installationa. Next largest groupings are finance, diatribution and central and local

HISI is the only computer firm in Italy fulfilling all the aupplier company's forerunner Olivetti
first started work with Plaa University in the early liftias on Italy's first computar, tha Elea. Currant collaboration in- by value of the Italian total and



right) at Celuso.



Two of tha world'a laading computer graphica axparta from tha USA ara prasanting s doubla-haadar aaminar in London

Company (ex Carl Machovar

Machover Associalas Bart Hartzog Diractor of the

joining them on the platform are Robin Forract

Computing Centre

Darrick Grover CAD specialist at the National Research and Development

#### Interactive Computer Graphics **Hardware and Systems**

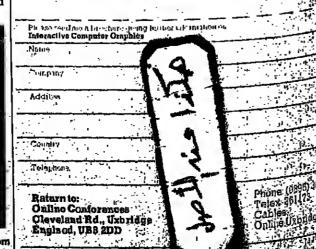
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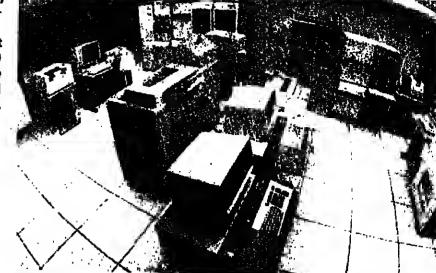




Spain la soon to become a aerioua contender in the DP atakes. But rather than taking on established marketa in Weatern Europe and North America, Spain is looking to the Middle East, Latin America and Eastern Europe. Here Ivan Berenyi

government, the telephone company, banks and a local components manufac-

Set up three years ago by government decree; its brightest apark in the Series 30 computer system which is aimed at the spotlighta the activities of Secoinaa, a same market aegment for which the IBM consortium financed by the Spaniah System 3 and the ICL 2903 were designed.



Computer Weekly Internationni, July 13, 1978

oinsa Series 30/5, o smoll business system (left), ond Telesincro's Series 10/

Spain bids to set up its own DP industry By Ivan Berenyi

Serics 30 has a 670 nanosecond

LSI main memory expandable

from 24K to 224K bytes. This is

backed up by virtual memory

configured in 512 byte modules.

THE opening of a purpose-built rent model in a family of small factory in Malaga by the business systems designed and Spanish company Secoinsa later this year will mark a new step in visble Indigenous computer in-

dustry.

The factory, on the Guadal-horce industrial estate, will be making the Series 30, a small business machine, ond the scientific/industrial Series U models, as well as a range of

Both the Series 30 and the process control-oriented Series have been designed for Secoinsa by the Japanese manufacturer Fujitsu, which has a 28% stake in the company. making it the largest single shareholder. Other main shareholders are the Spanish National Enterprise Board) and the telephone company CTNE. Both hold 25% of Seconsa, the balance being made up by nine Spanish banks and locol components manufacturers Piher.

The Series 30 is the brightest spark of life yel shown by Secoinsa — an acronym for Sociedad Española de Comunicaciones e Informática — since it was created by government

decree three years ago.

Now the first fruits of the government's policy are beginning to emerge. Last year saw the introduction of the Secolnsa 35. a disc-based minicagnites. 5, a disc-based minicomputer from the Fujiisu design stable; the Series 30, designed to com-pete in the IBM System 3 and ICL 2002/4 ICL 2903/4 sector, will go Into production late summer or early autumn; and the Seriea U, about which little is so far known, will

Secoinsa and Telesincro is contransmission network. fusing. Officially they are 67% stake in Telesincro — the minimum controlling Interast under Spanish fiscal law. But some effort is being put into preserving the separata identity of Telesinero, for legal and tax

reasons Secolnsa says.

The result is that the majority of employees, including almost tu Telesinero and paid from Barcelona, though they are ex-pected to handle products bearing either name. Only staff hired by Secoinsa since the merger ara strictly employees of

the parent company.

"We all belong to the same group — It's just one company with two arms," explained Senor.

Juan Carlos Montero Vergas. Juan Carlos Montero Vargaa-Zunign, Secoinsa's director with responsibility for exports. Nevertheless there are signa that rationalisation is not yat complete. The Series 1074, cur-

made in Barcelons under the Telesincro name, also turns up Spain's attempt to establish a as the Secoinsa DF-4 - something that image-conscious Spontsh customers find puz-

Geographical factors cannot have helped in the merger so far: the group's two manufacturing locations could hardly be further aparl. The Telesincro operation is based on a plant in Barcelona's Calle Rocaforte, employing about 550 people; Secoinsa cur-rently occupies a temporary building in Maloga, employing 95, while it awaits completion of its new factory in the same city. Group headquarters are in Madrid, about equi-distant bel-ween the two plants. But this industry ministry through its instituto Nacional de Industria, INI (analogous Io the UK's apparent initial drawback is intended to be turned inlo an advantage, in due course, in building up a dense network of sales and service locotions notionwide

The Secoinsa plant in Malaga currently makes only torininals and modems, but bacause the opening of the new factory hoa been delayed It Is likely that production of the Series 30 will start in the temporary building and be transferred towards the end of the yaar.

Two ranges of tarminals are banking terminals and simple keyboord machinaa. The influence of the Sacoinsa shareholders is apparent, the banks being a captiva market for the first product line, and CTNE a major customar for the second The modema - 2,400 and.

4,800 baud machines - are also largaly destinad for CTNE, follow naxt year.

The relotionship between of its Red Nacional national dato. Production at Malaga started

year 40 banking terminals and 1,200 modems had been built. Thrget figures for the first six months of 1978 were set at 80 banking terminols, 1,300 modems and 150 keyboard ter;

By the end of 1979, ambitious target figures are 3,200 modems, 200 bank terminals, 300 keyboard tenninols, 300 online teller terminals for banks, 200

The operating system is called Unios/F2, and the muchine can be programmed either in Cobol Uatil receatly Secolnag

was scarcely more than a layer of bureaucrncy imposed upon the old Teleginero company of Fronce's Plan Calcul

provided the original inspiration for the setting up of the compnny and, somewhet oddly perhaps, the creation of Cubo's Cantro de Investigacion Digital. The prime propegator of o Plan Calcultype approach wos Senor Claudio Grino Romos (pictured left) a phermociet who had been nominated Consejero Director General of Telesincro In 1973, but hos since left the Secolnso fold.

or Fortren as well as a low-level

anguage called Taskforce. Peripherala for the Saries 30

will be made in Barcelona and

almost certainly tha asme units

that are currently supplied for Telesincro's Series 10/4), up to 320M bytes of fixed head or

exchangeabla dlac storaga,

282K byte magnetic tape unita,

800 bpl caaaette tapea and a

ncluda-243K byte dlakattaa

Sacolnaa Seriea 30 computers and 110 Serias U machines.

Brochures are already in circulation among potantial Spanish customars for the Series , although the first machine has yet to ba bullt. Nelther Secolnaa, nor Fujitsu la kaan to talk about tha origin of thia system, but it appears to ba a new development for Secolnsa rather than an adaptation of an

Microprogrammed modules Telesincro's existing Series 10 are sald to be available for a minlcomputers (based on a 32K number of control, sclentific and communications applications.

to 64K RAM with a limited choice of periphernis including cassette lape, low-speed printer, fiche unit and — at maximum configuration - diskette) and he Telesinero Iber 2, a database-oriented mlnicomputer designed for online applications like stock control and small-scale reservations sys-

> The Iber 2 which Telesmero's litest adverts say is "the machine that converses in Castiliun," is the Catalonia-based company's newest model in the long-running "Factor" range; itself launched of the "15 Simu" exhibition in November 1975, its earliest predeceasor was the Factor P, first mnrketed in 1967.

similar but smaller System 35.

Tha P was followed by the Q R, S, S3050 (In three configura-tions), T models and the Castor

Seriea of the Factor line. Of the Secolnea Series U little s known excapt that it will serve real time needs and will be available in four configurations from U-100 to U-400.

Secolnaa'a development programma ia cleorly bottom-up rathar than top-down, which ia realistic in view of ita lack of direct government support and the compatition from iBM, Uni-vac, Fujitau itsalf, Honeywell-

Bull and, increasingly, ICL. Franca's Pian Calcul provided the original inspiration for tha setting up of the company and somewhat oddly perhaps, the creation of Cuba's Cantro da investigacioo Digital. The prima propagator of a Plan Calcui type approach was Senor Claudio Grino Ramos, a pharmaciat who

printer or video terminals will be in 1973 but has since left the available. The terminols to be Today export director Juan Carlos Montero warns againsi The System 30 will join the

drawing too close a compurison between the Secoinsa effort and Plan Calcui. "Sccoinsa ia a private company, nol government-sponsored outfit e pointed out. "OK, there is a partlai government owneralijo through INI, but even if you put the holdings of INI and CTNE. logether, they come to less than 60% of the lotal.

"We are in the same position as any other computer products supplier in Spain. There are no import datjes levied on compiller manufacturers here, so we have to compete on equal terms with the IBMs and Univacs. Our prices have to be very com-

Lust year the group's turnover of domestic sales was around £6 million. In addition there was some export activity lu.Portugal, where Secolnsa lins a snles

Secoinsa'a commilment to exporting is firm but solective. "As Spanlah compnny wo obviously anjoy linguistic and other advantogas in Latin Amarica, ond this is our prima export orientation," anid Mon-

"Of the four initial countries. Mexico and Argentina heve the highest technical lavel, in Chila we have good contacts and in Venezuela there is plenty of onay but not so much technical sophistication."

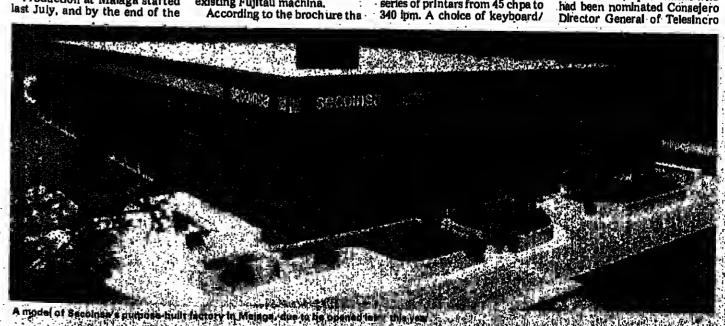
But the compony is also looking south and east. Threa Arab countries — Egypt, Iraq and Algeria — are to ba used as pliota for a Middle Eastern and North African export presence. :

Secolnsa is currently studying tha possibility of aetting up s Joint Spanish/Egyptian regional HQ in Cairo to provida salea, aystems support and maintenance. This, Montero feit, would haip overcome tha language problem which might otherwise be prohibitive." In Eastern Europe, which Montero considers another area of potential Interest, initial co-operative talks have taken place with the

Soviet Union, Western Europe la to bailg nored though. "The European market is too strong, and to break into it needs too much investment in our terms." Mon-

investment in our terms. Montero conceded

We have not even given a
serious thought to official participation in events like the
Hanover Pair on Sigob a their
some of bur people from the
R&D and preduct divisions tend
to go to have a look around. We
are do interested in Europe
poiside Spain and Portugal, yea
preduct to invest alsowhere.



A summary of main news items which have app-

eared sinca the lest full issue of Computer

The development of distributed processing and ter- have moved into this expending market and much of when it gets US government approval, will offer as a users' neads. Most mainframe manufacturere, verge of becoming a resilty in the form of AT&T's ends. Hara, MORRIS EDWARDS (right) looks of the

minal networks hoe resulted in the introduction of s the equipment now offered is, inevitably, IBM- service most of the processing facilities that are now wide range of systams and hordware designed to meet compatible. Now, however, a new challenge is on the handled by communications processors and front handled by communications are compared by the first handled by the fir ations System which, systems and considers possible impact of ACS.

OVER the past few years, communications processors have been pacing the evolution of both centralised end distributed processing networks in the US.
Users with centralised systems have turned to programmable proceasors to minimise the growing pains associated with adding new terminals and applications; likewise, managers of distributed systema have utilised processors to overcome any lack minals end host machines, and to almplify access to the network'a totel computing

Of late, however, the treditional roles of communications processors have been challenged by new, microproceasor-enhanced devices and by innovetive carrier services such as packet-switching. Now comes the greatest challange of all: AT&T's revolutionary new service. Advanced Communicationa Systems, ACS.

If it wins approval from the Federal Communications Commission, ACS promises to sheke up the computer industry in the US, particusrly the meinframars and other suppliers of communicetions processors. ACS wili incorporata communicationa processing functions as part of the service, providing compatibility between terminals of different codes, protocols and speeds, and enabling terminals to handle different types of applications over the same link.

Without question, the reguletory process for author-Ising ACS will be a long drawn out affolr, and the service will not become operational overnight. Even so, the system will cause many users to re-examine their network plans and influence their equipment and service dacisione. Accordingly, ACS could impact equipment vendors from Day One, forcing them to re-think their strategies. This is particuarly true of IBM and the other mainframers who are basing their future date communications plans around SNA-like network architectures. which rely heavily on network software, front-end procasaing and terminel controllars functions that will be sbsorbed

While it promises the greetest impact, ACS is only the latest threat to the use of communications processors as front ends. messege switchers and data concentrators. Message switching, which was one of the first uses for communications processors, continuea to be a popuar application. Its future appeal, however, hes been dimmed by

# AT&T system challenges the front-enders

forward messaga switching servicea auch es OnTyms, Introduced by Tymnat in May, 1977. Likewise, the use of com-

munications processors as data concentrators is threatened by the increased capabilities of the less-expensive intalligent time division multiplexers.

Through the Intelligence added by these devices, smart multiplexers are eble to provide the statistical multiplexing, error control and networking capabilities of concentrators et a much lower cost and without Impacting host and front-end

Of all usas for communications processors, the front-end continues to be the most popular, and its futura seems the most assured. Today, users heve a brood choice in front ends. They can look to their main-frame supplier or to s group of companies which offer plug require discs or tapes for compatible squivalents (gen- message storage. Also, without erally for IBM systems). peripherals, the fronI-ends can-Alternatively, most minicomputers can be programmed to operate as front-ends. According to Creative

Strategies of San Jose, California, IBM accounted for almost 40% of the installed base of Iront-end processors in 1976. Other mainframe competitors, including Honeywell, Burroughs, Control Data and Univac, were also doing well in the communications processor merket. Digital Equipment, Data General, Modular Computer and Interdata were the leading minicomputer auppliers, and Collins and Comten the most successful of the independent

Since then, NCR has made

communications arena and famorex and Computer Comnunications heve had success as dependent suppliers of front-

IBM blessed the concept of tha programmable front end with its ntroduction of the 3705 in 1972. This device comes with its own progremms ble processor and can operate either as an emulator of the hardwired 270X family or as'a true front-end, unloading communications functions from the CPU undar the Network Control Program.

A leter introduction by IBM is a scaled-down version the 3704, which handles fewer lines end costs less. One major drawback with tha 3705 is that it does not support local periphersis, which preciudes its use for certain front-end applications, such as message switching or data acquisition, both of which not serve as a back-up processor should the host fail.

Even so, the importance of the 3705 was set in 1974 when IBM included it as an intergral part of Systems Network Architecture. Within SNA, a data communications network comprises the host System 370 and 370X front-end processor, and a variety of general and special

Since then, IBM has upgreded the 3705, lowering its prica and boosting its spaed and through-put with semiconductor technology. The 3705-li can provide up to six times tha high-speed communicationa throughput of the 3705-1, and leases for roughly half the price. Also, the front-

munications Function software

With this software, eny supported terminal can eccess an pplication in any computer in the network. Another new feature enables the 3705-11 to be used as a remote communications controller, concentrating dets from multiple communications lines before transmission to a 3705 attached locally to a Other mainlramers have also

ncluded front-ends in their network srchitectures. Honeywell Introduced the Datanat 6678 front and in early 1977 es part of its Distributed Systems Environment. Meanwhile. in announcing its Distributed Communicationa Architecture, Univec unveiled a Distributed Communications Processor, which can serve as a front-end, remote concentrator or network mode processor. Included with the erchitecture la an intelligent network communications system, called Telcon, whose major components are the communications processor and net-

work software. Control Deta uses a communications processor as the basic bullding block of its Distributed Network System.

NCR is another meinframer which also uses a communicetions proceasor as a key element of its Distributed Network

Minicomputer firma tend to emphasise the general net-working capabilities of their products and prsfer to sell e system rather than a single network component such as frontend or concantrator. Even so, gains among mainframers, end's networking cepabilities the minia find common use for Hewlett-Peckard has become were enhanced with IBM's inthe minia find common use for

the packeging efforts of systems character algorithm, enabling houses. For instance, Action detection to be performed in Communication Systems of hardware. The individual Dallas uses a Data General algorithms are dynamically deminicomputer to power its finable software, providing the Telecontroller, which is used as flexibility to accommodate a message switch and front-end in over 60 Installations.

Among recent networking developments with minicomputer suppliers, Digital Equipment has enhanced its DECnet softwere end Hewlett-Packard has demonstrated the resourcesharing capabilities of its HP 3000 as part of the Project Prelude experiment conducted by Satellite Business Systems.

The HP 3000 system allows gram. users to link any number of computera into data processing networks. What the experiment demonstrated was the ability to configure an HP 3000 network with each computer capable of automatically drawing upon files, programs and peripherals of other 3000s, no motter where thay are located. Digital's Phase II DECnet

oftware products have cleered the way for intercommunications between most of its processing network. major operating systems end computers, ranging from the LSI II microcomputer at the low end to its recently announced 32-bit Date General's minicom

puters are widely used by systema houses, and the firm also sells its machines to technically akiiled end users. Recently, Moduler Computer Systems unvelled the first members of o new family of computer systems that includes o communications processor capable of providing a multiplexed direct memory data path for up to 256 full-duplex

changing terminal environ-Of the independent supplier

of plug-compatible front ends Comten has made the bigges splash with its Comten Network Architecture, a combination of softwure and hardware designed to compete with IBM's SNA CNA Is implemented with Conten 36XO processors containing the firm's Network Control Pro-Also part of CNA is a software

system called Data Switching System, which provides data switching services and lacilities for distributing network management and communications processing in networks in addition, there is a complete system of programs and procedures chiled the Communications Networking System, which is used to interconnect Comten 36XO front-end processors and remote concentrators in a data

With its hardwired Model 1270 Terminal Control Unit. Memorex was one of the most Successful suppliers of 270% plug-compatible units. In late 1975, it supplemented the hardwired unit with a programmable communications processor, the Model 1380, which is a function nul replacement for the 270% and 370X controllers.

Computer Communications is another leading supplier plug-compatible processors hi CC-80 communications process sor replaces 270X or 370X communications controllers using IBM teleprocessing software. The processor includes a CCI signed, 16-bit minicompl with 128 hardware registers at the centrel controller, in separate input/output protes sor, es powerful as the CPU cu handla up to seven host computers, plus remote terminals

As a possible alternalive is these front-ends. AT&T plans perform communications perform communications part of the cessing functions as part of ACS service. The processing functions will be performe functions will be periodical local, computer based nodes stalled in Bell fadilities around

Besidee handling the protesting chores, the nodes will assemble data into packets improved transmission efficiency and route them their destinations: Uses access the nodes via dal change equipment on premisaa As part bi. wiii aleo provida a h



# NATO is to place giant software contracts

to bid for some of the biggest software contracts ever placed. The customer will be NATO. A call for bids is expected to be made soon for a study contract which alone should be worth about \$8 million.

The main contract will in-

volve a network of command and control systems covering European membar countriea and linking them with the US. Ir preparation for this NATO is convarting its integrated communications system, NICS, to nll-digital. The principal contrector for convarsion of ground stations end supply of all-digital stations is US motor giant subsidisry Ford Aerospace and Communications Corp, and the major sub-contractors are Mar-conl Spaca and Defance Systems, Messerschmitt-Bolkow. Blohm of West Germany and Page Europa of Italy. (CW, May 18 and July 8).

FIRST-QUARTER profits for IBM at \$589 million, were only 3% ahead of January-March last year on turnover up 8% at \$4,400 million. This could be the result of a temporary reversal of the trend away from leasing and towards purchase.

During the same quarter, Burroughs' profit was up 18% at \$35.5 million on turnover up 14% at \$505 million; CDC's profit was up 21% at \$15.7 million on turnover up 18% at £400.4 million; and NCR's profit was up 42% at \$22.9 million, on turnover up 9% at \$559.1 million. (CW, April 20).

PLANS for co-operation between the EEC and Indian companies in several areas of the computer Industry were outlined in a joint memorandum signed in Deihi in April betwesn the Indian government's Electronics Commission and representatives of EEC computer and software companies (CW, April 20).

### Electronic mail by satellite

DISCUSSIONS now under wey between postet authorities in the US, the UK, France and West Germany could lead to e transatientic electronic mati service by satelihe by the early 1980s. (CW, June 15).

A STEP forward for the moves to establish an independent South African computer industry was taken with the announcement that General Automation minia ere to be made under licanca in South Africa by Data Corp of Africa (CW, April 20).

RATED at about 1.8 times the power of a single-processor 3033, IBM's two-processor version (Roundup, April 13) only matches the power claimed for Fujitsu's M-200, which according to details released appears outclass the dual IBM machine in most areas. Fujitsu ia netional Litton Industries and planning first M-200 deliverias the West German Diehi group in Litton subsidiary IBM system is due to be available at the end of 1979 (CW)

company is Two Pi Co Inc. of Sunnyvale, California, and the machine is the Two Pl/V32, de scribed as a 32-bit minicombuter 11.)

the relationable between commatch that of the IBM 370/138. puters and privecy, data protec-tion and security should be har-(CW, April 27). CLAIMED to be the festest 16monised by e standing commitauspices of the Council of

bit minicomputar on the market, the new Hewlett-Packard HP-000 F-serles was announced in April. HP has also announced price cuts of up to 38% on memory for the earlier HP-1000 models. (CW, April 27).

CONTRACTS heve been ewarded by the US Department of Defence to CII-Honeywell Bull in Peris and to Intermetrics Inc of Cambridge, Massachusetta to continue work on a common high-order language for embedded computer appli cetions, with the alm of deivering compliers in 1979. (CW.

DUTCH Philips hes taken a me-jor stride in the word processing market with the acquisition of about 80% of the Montreal-based company Micom. The latter's floppy disc-backed system. which is built around the 8080 micro, will retein the name Micom in North America but in Europe the system will be given a Philips house identity and aunched as a complement to the WP 5001. (CW, May 4).

AN Investigation by IBM revealed that over-enthusiastic Japanese salesmen had been giving potential customera advance information on the company's forthcoming E-sariea, which is to replace the lower and of the 370 ronge. Apparently tha salesman ware telling customers that the new line would be ennounced shortly, and that it would offer double the performance of the axisting 115 and 125 et about the same price. (CW, May 4).

AN agreement between Fujitau and Siemens allows the latter to merket the Fujitsu M-18011 and M-200 large-scale meinframea in most Europeen countries. In return, Fujitsu la to buy, on an OEM bases, the Siamans ND-2 laser printer. (CW, May 4.)

THE Europeen Association for Software Access end Informa-tion Transfer, EASIT, which recently calebratad its firet birthday with e conference in Paris, has devised a new method for the classification of technical software products. The method is a compromise between the one-dimensionel approach and the keyword system. (CW, May

ADDITIONAL joint ventures between Control Data end the be esteblished, but CDC cheirman William Norris blames the US government's export policy for the poor performance of the existing Romcontrol Data vanture which builde printers and other paripherals. (CW, May

A COMPLEX series of agreements between US multiwill result in Litton subsidiary Triumph Adiar acquiring that Diehl Datenaystem company. A SUBSIDIARY of Philips has amall computer and onice ayar entared the IBM Plus tema in return, Diehl group will compalible CPU market. The get-12.8% of Triumph Adler's company is Two Different parent. Triumph Werke Nurn which make and sella very berg, with an option to increase this to 25%, Triumph Werke was 98% owned by Lifton (CW May

Medical conference Federation for Madical Infor-

Weakly Intarnational.

metics will hold its first conference at Cembridge, England on Septomber 4-8. It is organised by the medical specialist groups of the British Computer Society. ference at Cembridgs, England on Geptomber 4-8. It is organised by the medical specialist groups of the Sritish Computer Gociety.

An important pert of the conference will consist in introducing medical computing to doctors,

lopments. No products are involved, end the agreement excludes exchanges of manufac-

been mada by ICL in South Africa. The local subsidiery is investing R300,000 (£180,000) in the training of Blacks, Coioureds and Aslans this year. company meking 64 K blt ran-dom access memories (CW, June A TECHNOLOGICAL exchange

givernment's National Research and Development Corp, Compeda, has set up its own sub-sidiary in the US, with offices in New Jarsey and San Francisco, who have no prior knowledge of the subject. More than 200

and is to form a company uring information. (CW, May

THE British government's National Enterprise Board has astabilahed a multi-mililoh investment plan to set up a British

A SUBISIDARY of the UK

Holland. Compeda waa formed to market world-wide softwar developed in the UK for high echnology applications. (CW

THE Dutch PTT hes bought a version of the UK Post Office a Prestal viewdete software and e 4080 minicomputer from the UK company GEC. (CW, June 15.)

ro ward off increesing com petition, primerlly from IBM with its low-cost 303X com puters, ICL has introduced is new machine, the 2972, end at enhanced version of the 2976 both of which employ 16K bit memory chips (CW, June 15).

## **OCS.A** new member of our fast growing family.

months, after final editing. The technical specification is likely

to basimilar to that proposed by

ANSI's X3J3 committee last

June, including amendments

made in October. (CW, May 18.)

A MAJOR commitment to non-

(CW, May 1g.)

White computar training has

greemant between ICL and

Hitachi has been signed. It is

confined to reciprocal visits of

high-level technological deve-

iopment staff and exchanges of

views on future industry deva-

Resulting in:

Improved reliability

hrough console back up

programmer productivity Significant increase in

Increased operator and

The Supplier of proven systems software to IBM DOS and DOS/VS users world-wide has again added to its product range. SDI now provides OCS the package which brings IBM operating techniques up to date.

Features include

Europe, according to a paper

submitted to the Council by the

European Computing Sarvices Association. (CW, May 11.)

AN EEC working party has been

set up to examine tha role public

procurament can play in

implementing International standards (CW, May 11.)

COPIES of the new Fortren

standerd, popularly known as

Fortran 77, will be made avail-

able by the American National

Standards institute in about two

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# Boom or bubble in the IBM-compatible market

from page 31

IBM 303X processors, their place has been quickly taken by other IBM users who want the earlier deliveries that Amdahi and Ital

increasingly in the future from that offered by IBM on its own 370 and 303X processors, as it elready does on Siemans/ under US/IV-F4 and on CSS
3200 eystems running under
VP/CSS IBM has begun a policy
of charging both its own Fujitsu M systems running under OS/IV-F4 and on CSS of charging both its own and users appear to think so, becompatible system usars for cause there are still a large.

matching microcode for many of these extensione, as Amdehi has already decided in the case of MVS/SE.

turere may decida not to provide

This divargence will only be of Operating systam software concern however, to those IBM available on Iha compatible pro- usera who accapt wholeh eart-cessors may, however, diverga edly IBM DP Division's philosophy of maximum centralisetipn of deta processing, end therefore feel obliged to install every new IBM OS releasa end tipgrade when it occurs. Such

to remote offices and fectories must, howaver, also pay particompanions system users for cause there are still a large, must, however, also pay partitude the surface market seem sold implications in cular alterition to the quality enough. Amdehi, which has now tensions, such as MVS/SE, and the field, whose users refuse to and speed of response of the conquered some 15% of the large of embedding the core routines, be converted to 370, and an maintenance engineering sup- IBM-compatible processor, 370, of such extensions in microcode, equally large number of 370, port available at each location, 168 or greater equivalent power, to improve throughout some last's who have not vertimple. Few river distributors of compatible thats worldwide, and

users are yet believed, by one pect.

The IBM-mechins code comimplementing OS/MVS.

It is to these "stabilised" IBM

usera that the compatible processors will appeal primerlly, es aree where office floor space the most compact and costeffective method of equipping Themselves with edditional processing power wilhout disturb-ing their operating environ-Companies plenning to dis-tribute part of their processing

compatible processor manufec-turers may decide not to provide No more than 30 per cent of able to match the iBM customer No more than 30 per cent of able to match the IBM customer lerge 370/148, 158, 188 and 303X engineering service in this rea-

manled or considered patible processors can thus appeal to only some IBM users: those with installations in a main industrial and commercial may be at a premlum, with a etablised operating environment that they do not wish to enhance significantly in the future, and with enough self connce to be willing to look at. alternative aŭppliera

Those manufacturers and distributors alreedy present of the European market seem solld enough; Amdahl, which has now

ke-outs.

current IBM 370 and 303X and their independently manufactured compatible rivals equally obsolets. Rumours from within IBM indicate that the naw relational database managelopment, and all the advanced tion Language so that use DB interrogetion end manipu-program their node bases. letion languages that will go cations with its will not be made ret Potentially, it all adds with its will not be made ret rospectively available to 370 and greater choice for the data pro-303X processors but reserved to implementing their unless the new H series to be an aing networks.

Itel, veteran survivor of the leasing company, PCM

ment system now under dava- language called Feat nounced in 1980 or after course. AFST be nounced in 1980 or after course. AFST be Amdahi, itel and other compation powerful in libie processon users will be nominimisations and worse off. Sufficient unto the isquelches the company the problems thereof.

peripherala and mamory market the country. In the long term, new components and systam architec-tures in the 1980s will make both

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## INTERNATIONAL **NEWS IN BRIEF**

## Joint venture in Iran

ALREADY well-placed in Iran, Univac has set up a joint ven-ture company, Univac Iran, to market and aervice its computera there. Two Iranian buainessmen, Abdul-Majid

data collected by earth resources satallitea as part of the country'a agricultural develop-

### Firms collaborate

THE leading French minimaker. SEMS, and the leading offics computer and peripherala manufacturer Logabax are col-laborating on n bid for a contract from the French PTT for Post Office counter terminal systems. The move is seen in France as a first atep to a cloaer association

#### Cancelled

IRAQ is reported to have cancelled an order for a Robotron ES-1040 mainframe from East Germany. The 1040, rated by Control Dota as comparable with the IBM 370/145 in power, has been inatalled in India, Cuba and the US, as well as in the Comecon countries. The US machine was bought by Control Data to check that the machine could successfully be married to plug-compatible

## **Brazilian lights**

TRAFFIC lights at 400 road junctiona in downtown Sao Paulo, Brazil are to be controlled by a computerised wide-araa system installed by Plessey under a £14 million contract. The contract, one of the largest of its kind ever placed, was won in competition with Philips and Slamens. Equipment to ba installed includes a Pleasey Telecommand-8 data tranamiasion system, Type 99 controllers, and three minicomputara. Plessey normally usea DEC PDP-II minis, but the choica is left to the customer, and Sao

#### yuten order

FIRST order in the Netherlands for the IBM compatible IteI AS/5 processor has been placed by Cantraal Behaer, a major

Paulo has not yet decided.

Scicon to design for EEC centre nearer the attachment to Europet of the scientific databases being developed by the EEC Joint Research Centre in lapte, Italy. The company has been contracted to undertake detailed design studies language for use locally and by Euronet subscribers.
The task will also consider ways of mapping the functions defined on to corresponding Adabas con

been contracted to undertake detailed design studies following its earlier examination of detabase international standards will also guide the comparagularments (CW, February 17, 1977).

The earlier phase culturated with the selection of the earlier phase culturated with the selection of the earlier phase culturated with the selection of the following that the selection of the following point to investigate the mind recommendations made by ISO and UN ISIST. Scient's renewed contract with the centre complement of the following blood date on to the DEMS, mapping of the following blood date on to the DEMS, mapping of the following blood date on to the DEMS, mapping of the following blood date on to the DEMS, the distribution of an information retrieval language.

The last named take will involve a review of the proposed Europet take will have been a selection of Roger Tagg as shalmen of a new UK proposed Europet take will have been a selection of Roger Tagg as shalmen of a new UK proposed Europet take will also guide the company's proposals in the area of bibliographic attraction. The division into fless and entities is to bear in mind recommendations made by ISO and UN ISIST. Scient's renewed contract with the centre complement type in the selection of selection of the DEMS.

The last standard commend after the output of the selection of Roger Tagg as shalmen of a new UK proposed Europet take will involve a review of the selection of Roger Tagg as shalmen of a new UK proposed Europet take the company of the selection of Roger Tagg as shalmen of a new UK proposed Europet take will involve a review of the selection of Roger Tagg as shalmen of a new UK proposed Europet take will involve a review of the selection of Roger Tagg as shalmen as the complete take will be companied to the complete take will be complete the complete take the complete take will be complete the complete take take the complete take take

## Novas join the fight against cattle disease

Voterinary loboratories throughout Australia ere baing equipped with Dots General Nove 3 with Dots Gonersi Nove 3 minicomputers os part of the fight egainst bracellodis in cattle. Data from the analysis of blood semples is fed into the computers, as shown in our picture, and reports are sent to a central Nova in Canborn where administration can keep track of the istratom can keep track of the

The minis have communica-tions facilities, and the 20 machines across the country can be linked together in a network to help deal with amorgancies such as outbreaks of foot and mouth



# Italy gets to work on Asiam and Anmed vanabzadan, hold a controlling Interest in the company. Univac's ninat significant Iranian Instillation is an 1110 mainframe being used to process

THE Industry Commission of the Italian Chamber of Daputies ls currently working on a nationsi plan for the electronics industry, and among the companies which have made aubmissions are Dilvetti, Honeywell Italia and IBM

The Italian computer market is the sixth largest in the West, and it has long been a source of embarrassment and irritation to Italian manufacturers that the country has no national policy for support and development of the local computer industry.

Honeywell's submission to the Commission emphasises that it is the only company which develops and manufactures a complete line of general purpose computers in Italy. The line referred to is the small-to-mediumscale Level 62 series, which has traditionally competed with the IBM System 3 worldwide, but has now been given a facelift to improve its performance in the rapidly-growing market for transaction processing systems

(CW, June 29). The company claims that its development laboratory at Pregnana, Milen, is not simply a readurce of benefit to Honey-well, but a national Italian assat. It also points approvingly at the approach taken by the French

"The French govarnment's moves which led to the formation of CII-Honeyweli Bull have simultaneously achieved two objectives: the country now has the international links which are essential to auccess, and at tha same time has retained a national capacity in the field of research and development of general purpose computers,"

Emphasising the need for a national capability in design and manufacture of general purpose computera, Honeywell adds. 'While we recognise that national plan cannot embrace all parts of the computar Industry at once, intervention, indsed participation in the fleld of general purpose computera Such collaborationa could teke remains paramount. Without the form of joint vantures or

into penpherala will be adver-

Whils Honeywell's submission implies that it might be prepared to concede some equity to Italian interests in return for government support either in cash or in guaranteed ordars, IBM stresses that any national computing plan should not discriminate in favour of a company or companies at the expense of the rest.

It says that it would favour a plan which would encourage development of the computer industry in terms of employment, research and production.
It underlines the need to en-

courage development of application software in which italians could make an immediate and original contribution to the growth of the industry.

public intervention is to make a constructive contribution, there should be no taint of discrimination, and all decisions should be based purely on the usefulness and quality of the product, the quality of aervice and the ability of the people

Olivetti's aubmission opens by noting that the enormous costs involved in converting from lectro-mechanical to electronic hardware, and in retraining of peraonnal, have besn a severe constreint on the company's growth. The company believes that computers should be accorded a key role in the development and rastructuring of Italian industry. The national plan should run for at least five yaars, and funds should be made avallabla to Italian-owned compariles for both hardwars and software research. Areas it particularly singlas out are dis-

tributed processing, dats natworks and office automation. tion of know-how is particularly Important, and suggests that collaboration with foreign companies should be considered.

The company also belleves that, other things being equal, Italian-owned companies should be given preference for ordera in both the public and the private aector. Medium-term goals should be set for research programmea, production and employment levels, and exports.

The company outlines various methods by which support could

be given. Research and development into new products, In-

"In our opinion," ssys IBM, "if CONSOLIDATING Its position Series 9500 range of disc systems in the European market place, the US-based dlac subaystem manufacturar Syatems In-

> in Weat Germany and Scan-The subsidiarles, basad at Frankfurt and Stockholm, will be controlled by tha company'a European haadquartars at Woking, Surrey. The firm has also changed its trading nama to

Systems Industriaa haa baen selling disc aubsystems in Europe for the last four years, starting in the UK, and ita cus-

disc systems will be shipped from the firm's Sunnyvale, California, factory this year. Systams Induatries now plans

medle and storage modula type

Industries product lines are the

## India's first **CAT** scanner

Hong Kong has acquired its second EMlecenner, e general-purpose CT5005, which was brought by Sing Tao Newspapers for the Baptiet Hospital,

tion and tax credits. Support ahould also be considered for applied research in universities and public research laboratories, or for apecific collaborations between public and private

and launching a product could

Ollvetti would like to see government contracts being placed for the development of specific products required by the

## **US** manufacturer sets up subsidiaries in West Germany and Sweden

Arlzona.

which use CDC 9762 ond 9766 disc drives and can have copocities of up to 1,000 Mognbytcs, and tha Sarles 4500 which con duatriea, haa set up aubsidiaries

Systema Industries (Europe).

tomera are mainly systams houses and big end users with Digital Equipment and Data Genaral minicomputers. More than \$8 million worth of

to introduce a range of disc aub-systama for 1BM Serles 1 minicomputera, using flxad

The main existing Systama

PRESIDENT of Indla Sanjiva Reddy inaugurated india's first computar tomography acanner at the All India Instituta of Medicai Sciences, Anaari Nagar, New Dalhl. The eyatem is a CT1010 spacialist head examination EM lecanne

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## Low-cost mini from Norsk

A LOW-COST version of the Norsk Data Nord 18/5 minicomputer, foreshadowed earlier this year (CW, January 19), has now been formally an nounced. Called the Nord 10/M it is o reimplementation of the 10/S processor in bit-slice technology using the AMD 2901 chlp, and is aimed at the OEN

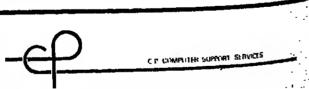
It runs under the standard Sintran III operating systemand is capable of supporting up to susers, each with a 64K-byte virtual memory partition.

Physical main memory extends to 64K-words with virtual oddressing of up to 512K-works but on optional memory monagement system enables real memory to be extended to 512K-words.

The disc controller support up to four drives, each with moximum of 288 Megabyles and there are also interfaces for synchronous data transmission and attachment of tape ast floppy disc drives. The price for 32 K-word processor with a Megabytes on disc, floppy dat drive disc controller, memor management system and one terminul is about £25,000 is single quantities.

## Airline control system

A LOAD optimisation and pussenger acceptance control system has been installed a Heathrow Airport by Cable at Wiseley for Polysten Intel Wireless for Pakistan Inten ational Airlines. Developed in C&W togethar with School Lopac is based on a PDP. his provide more than 50 Megabytes the fifth system to be inside and several more are plant including u second system for Hong Kong's Kal Tak Airput. per system. The 4500 systems use 10 Megabyte cartridge disc drives manufactured in the US by Wastern Dynex of Phoenix,



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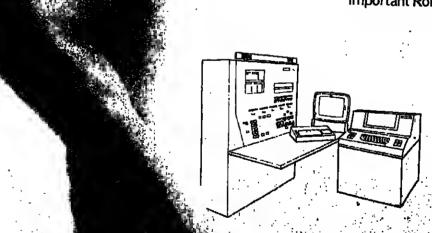
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This position requires e meture and business-minded parson, who is experienced and confident in the dasign end implementation of international marketing policies, both in the short and long term. A thorough understending of the wider European business environment with its netional differences is essential.

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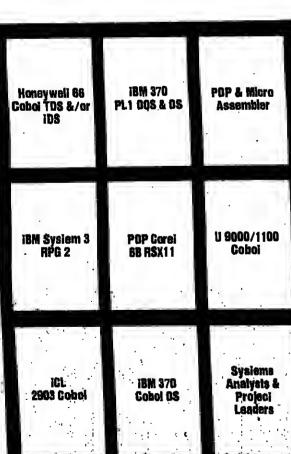
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An outstanding opportunity exists for an additional recruitment consultant within the

The Successful cendidete will work within a first moving environment and be responsible

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An exparienced Programmer is required to the first gramming Section. Applicants should have first gramming experience, preferably including supervisory experience. Loss cluding supervisory experiences. Loss knowledge would also be an advantage in the County Council run an ICC 19085 1280 due to be changed for a considerate when applying applicants should discharge the professions.

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Chief Programme

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Ref. A1/130

Application forms are available from a Officer, County Hell, George Row, Telephona Northempton 34835 attached by 27 July, 1978 about by 27 July, 1978



## **Data Control Supervisor**

In anticipation of expansion and an increased workload, our clients, a major international bank, have recently installed an IBM 370/138 and are planning to replace their existing 370/135 with a 370/148.

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Candidates should prefumbly have in-depth supervisory experience in data control, especially in computer scheduling and librarian duties. A daily shift system is in operation, for which a shift allowance of £550pa is puyable,

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Write ruclosing a c.w.or telephone for an application form on 01-262 0181 qualing reference CRS/80.

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In addition to e tex free selary, the Company offers e 35% regional allowance, free furnished accommodation and financial assistance in the purchese of

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Our client built their success on paople and thair idaes. They believe there's only one kind of job. Tha kind whera peopla become highly involved. With thair work, With aach other, With Idaas, Whera new solutions ara raspacted end encouraged. Whare your co-workers are competent, stimulating and ganuinely interested in their work, too.

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Salaries up to £14.5K (EEC), £8.5K (UK)

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You should have current exparlance in the implementation and support of Date Bess and/or Real
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Our ollant is e major international company recognised as market leaders in thair field and has retsinnised as market leaders in their field and has retained. Logistix to essist in recruiting the following Kay project teem specialists: Real-time miniprogrammers, Data base designars and communications experts (Mini and Mainframe) Application and Softwere programmars. Experience of any of the following will be aspecially welcomes RSX II; RTLII, BASIC, ASSEMBLER, PL/I; COBOL; IMS,

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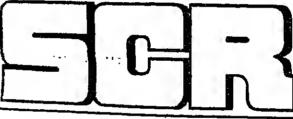
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of on-line systems, together with knowledge of data structure analysis would be of

The Company offers excellent conditions of employment, including five weeks holiday, an excellent starting salary and relocation assistance where necessary.

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You will be responsible for the development and ongoing control of standards within the installation, covering all aspects of the DP operation -

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3 x 370/145 operating under
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Mony of inday's most implication a model, systems are being developing on mind computers and me improcessors. This developing on mind computers and me improcessors. This developing the art of the processors in turn, content or remaind the specialist expended of a vary high mater is a tenedam essential that carnidates should hald a degree or a consulte stacipline coupled with at lune two years' expensions of real term computer systems. A way-bring knowledge at order of that term computer systems. A way-bring knowledge at order in the CORAL ASSEMBLES und/or FORTRAN is required. Proposts angle hear Space. Avionics, Deldaco and Military systems through to Deldaco mind Military systems through to Deldaco mind Military systems through to Deldaco mind Military systems. Computer specialists with list-turned experience of scientific systems will wolcome the appartmently to participate a condition of the most creative areas of mathem Deta Processing. For third details please quote CW 193.

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(Gradustea £3-£4,500) (Programmere £9,500-£7,000) (Project Ldrs, £6,000-£8,500)

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Retelning terge ICL 1900 equipment they offer sxcellent opportunities for persons with minimum 2 yeers' ICL COBOL experience.

- Compeny oflers.

  \* Treining on IOMS detebase
- Development to Anelysis
  Opportunities to join et senior level
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- \* Selery £5,500

REF. 1549

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Our client, e mejor preservetion society besed in rural Wiltshire have vecancies for enelyst progremmers with et leset 19 months.

RPG It expensance. They ere involved at present in teking over ell
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- \* Generous relocation essistence
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   Beautiful rurel surroundings with very reesonable house prices k Excellent promotional prospects
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WITH THE

- \* Greet premotional prespecte \* Selery £5,500

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Our client is a major International organisation with offices throughout the world. They seek programmers and enalysts in BAHRAIN & JEOOA where their merket is growing strongly. Ideal applicants will have COBOL and/or NEAT experience on NCR amell siness machines to work on an interesting variety of projects in a

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HOLLAND

REF. 1593

Our client, a mejor end successful concern, wiehes to strengthen its European pregramming teem. Retaining IBM 370 herdware under OOS/VS, company seeks embitious person with et leest 19 months' PL/1 experience (CO9OL would be an easet). Company

- \* Involvement in the development of new orejects \* Opportunity to work in an expanding organisation operating world wide
- Centrally besed Amsterden
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REF. 1935

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- time snering systems with opportunity to work of sitten observes machines. Company offers.

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REF. 1568

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SYSTEMS ANALYSTS **ESSEX** 

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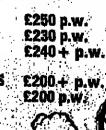
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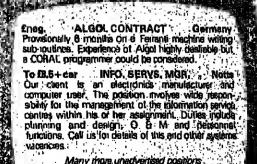
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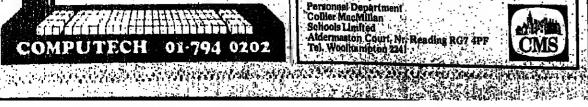
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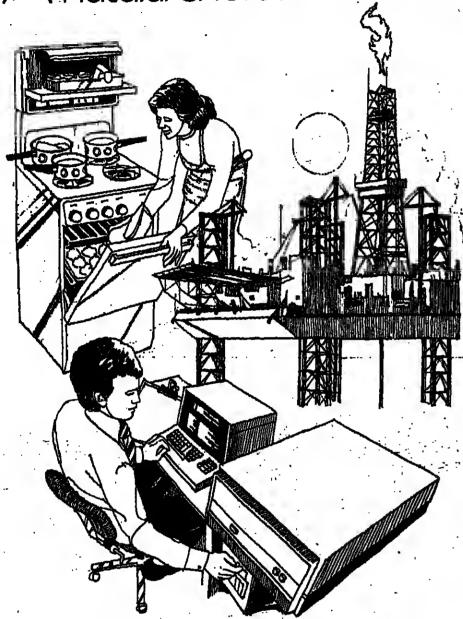
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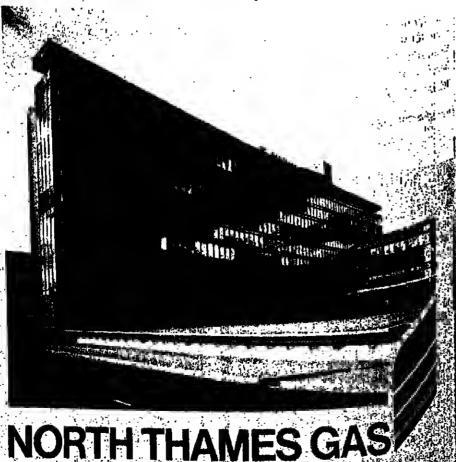
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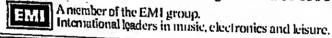
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heatre, who has since left. Others enjoy creating a works in the computer in-duetry, so inevitably conworks in the computer inversations between ua often drifted into the computer cal jergon, perheps to compensate for their own in-The other day i was at the the language of the industry theatre and was talking to so much in the normal purone of my colleagues who suit of their occupation that had not realised the reeson they don't know when to for the departure of my switch off. This applies to computer industry friend many selectmen, particu-

lndustry?" he asked. "No, he's a systems pro-

dustry," l explained.

was never absolutely sure his business problems. This about what he did before, process alone makes him but from the sound of things, he either used boats or built them."

"Oh yes," said my thes- any pleasure at all from the pian friend," he was in egocontricity of parochial volved with deck equipment. I heard him mention our to learn the jargon of

My first reaction was to laugh hysterically, but the ling. That way the client can look of absolute conviction he convinced that his proon his misinformed face blem is understood and can made me see him monten. thus assume the solution tarlly ss a prospective first- will be workable. time computer user. He The use of jargon may knows nothing of comprovida o "buzz" fur those puters, and tharefore near to the computer inrelated the languagea pra- duetry, but it can be a sented to him to the context significant barrier to aucof his own experience. The cess -- as ere all actions end

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feel insecure. Consequently,

to be dragged into a morass

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was his relocation due to a larly when taking to change of employer. change of entployer.
"is he still in the shipping whom the world "input" le the epitome of technical "Shipping?" i replied, mystery. grammer. tive computer user con-

"A whet?" he asked. "In the computer in-"i see, that's a change. I

I was very suprised to housible verbinge serves discover this new facet of only to make the proposi-

my friend. "i didn't know tion secm less of a good

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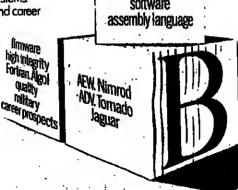
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On September 28th Computer Weakly will be highlighting career opportunities with Building Societies.

# Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth Block 15 (Jellhause Black)

Hex and his friands are now trapped inside their crater with the talking Sosquatch. While they pomier their fote, Extracode is finisilling off his interrogotion of Simula.

SIMULA was still trying to digest what Benzedrine had told her when Extracode's voice penetrated her private

thoughts.
"That will be all for now."

"Oh, yes," she replied uncertainly.
"Miss Benzedrine will conduct you to your quarters."
"Quarters?" The word had conjured up in her guilty mind a picture of a prisonar being hanged, drawn and quartered. "You will remain with us for the time being. I trust you will find your stay a pleasant one," said the inspector.

Benzedrine led her out, placid like a lamb to the slaughterhouse; and took her to a wing of the building where a little room had been prepared. There wasn't a

peephole in the door or any bars on the window, but the ides of a prison did samehow suggest itself to her.

When Benzedrine left, Extracode rose and went to a bookshelf behind the desk. He selected a volume and pulled it out, not to read but to activate the unlocking mechanism which caused his bookcase to swivel round revealing an entrance to a large well-lit room, the far end of which was divided off by a glass partition. in the further half were banks upon banks of the lastest electronic equipment. At the near end sat two robots behind a table the surface of which was an Illuminated chart of the Slerra Nueva region, nolographically contoured. The nearer of the two nodded in his direction and beckoned him in.

"Ah Derek! The third member of our panel," said the robot. "Do join us."

The speaker was Ivor Glitch, database administrator.

Next to him sat Commander Herman Kludge, the dynamic debugger at whose hands Sheriff Sprocket had met a sticky end. Together with Extracode they constituted the Committee On Bug Rectifying action, COBRA, and their brief—the detaction and correction of errors throughout the System—made them one of the most requestion. System — made thent one of the most powerful groups in he land: in fact, in a case such as this, the "hot pursuit" of a rogue android, the only authority that could countermand their orders was the Universal Network Operating System,



UNOS, Itself. The chairmanship of this committee rotated on a monthly basis. This month Giltch was in the chair, ea previously Kludge had been. Extracode's turn at presiding would come next.

Extracode look his place on Giltch's laft. Standing in front of them on the carpet looking damp and bedraggled after cycling through a dawnpour, was Jamea Hack. "I hope you had a productive afternoon," said Giltch as

Extracade sat down. "I think I have," he replied. "I believe I've got the lead

we've been seeking.

"Excellent. Well, just to put you in the picture, this is Mr Hack who has had some valuable things to tell us. Apporently, he was waylaid by the Kid and the human, who stole his motorbike. He tracked them down to San Guine and apprehended them. Unfortunately, they escaped with help from Inside the System. Then the conspirators split up and Cleo, with one of the traitors, eluded our patrol which gave chase on a Cray-2."

There was a sharp Intake of breath from Extracode.

"I needn't tell you what a serious breach of security this represents," continued Giltch. "But while our forces were floundering Mr Hack had the presence of mind to set out to rediscover his vehicle, which they had used in their getaway. He found it abandoned by the roadside near the Sierra Nueva foothills — just here," he said, tapping the map-table. "Mr Hock also consented to a mind-probe which has supplied us with Information about Cleo, on whose behaviour patterns we have so far had inadequale data to establish a predictive profile. We have fed this into the Psycho-Evaluative Estimation Program and are expecting the results in a few minutes."

Extracode was less than thrilled. Somehow, he resented the triumph of the soulless formulae of psychonomic calculus over the seasoned detective's insight. Glitch turned from him and spoke to Hock, "Your efforta

will not go unrewarded." Hock purred inwardly. Even the indignity of the mindprobe had been worth it for the promise he had obtained a trial of hia text-processing package.

Just then a bell sounded on the red acrambler modem by Glitch's right hand. He reached down and plugged it into the decryption socket behind his ear. Extracode watched the orange carrier-aignal lamp flickering. When it finished Glitch spoke first to Hock.

"You ntay go now." "What about the Installation of my string-processor?"

"Later, later! This is an emergency."

Hock made his obesisance with an elaborate pantomime of bowing and scraping. When the door finolly closed on him, Glitch apoke hurriedly.

"Word has just come though that Hex and his guerillas are holed up in the crater of a dormant volcano in the Sierra Nueva. They are under observation by two trained animal-handlers. Kludge, I wont you to take a detachment of storm troopers up there right now."

Kludge rose, saluted and clicked his heels.

Extracode felt a twinge of regret. He should have been glad that the guess-wark was over and Hex's days were numbered, but in fact he was rather annoyed this his subtle scheme for setting Simula as balt to catch the Kid, based as it was on an intuitive grasp of the nice balance of human and inhuman motivations, would not now be needed. His palastaking labour would never now came to fruition.

palnstaking labour would never now come to fruition.

"Rementher," added Giltch as Kludge reached the door.
"I don't care about the rest but I want the Kid alive."

"Alive?" queried Kludge.
"The high-level goal-coordinator has issued a directive: get him, but get him alive."

This was news to Extracode too. The goal-coordinator was a permanently resident routine that sorted oul compelition between System priorities — the conscience and Supreme Court of the System rolled into one. The fact that It didn't simply want to crush Hex was intriguing.

Has the herdware gone soft? More firmware next weak.

· 1978 Pichard Forsyth, Rair Timesharing 

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